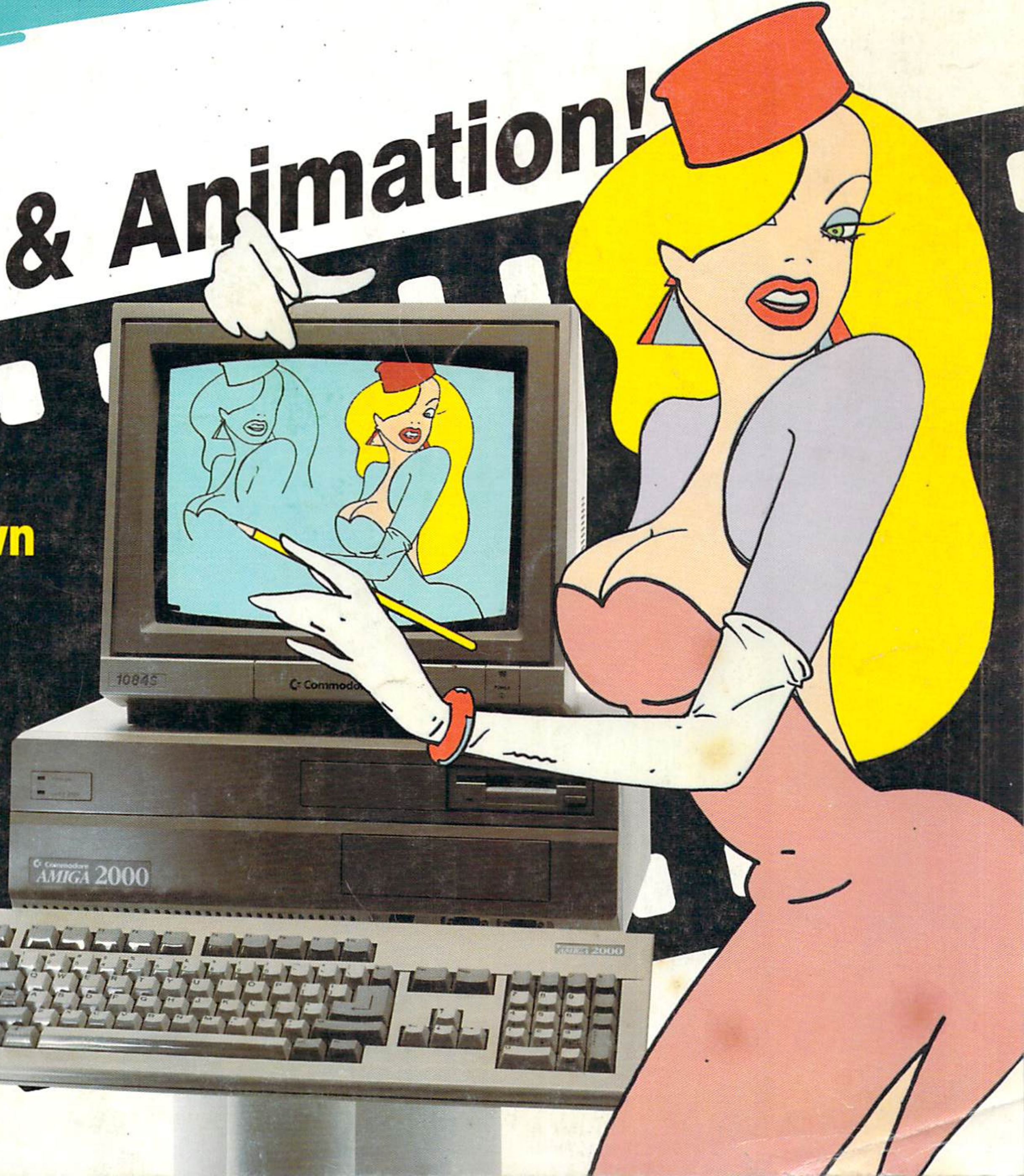
SPECIAL ISSUE: VIDEO & ANIMATION

SUPER Buyer's Guide! see p. 26

AMIGA WORLD

1990
An IDG Communications Publication
Display until April 1, 1990
U.S.A. $4.95
Canada $5.95
UK £2.95

DESKTOP VIDEO & Animation!



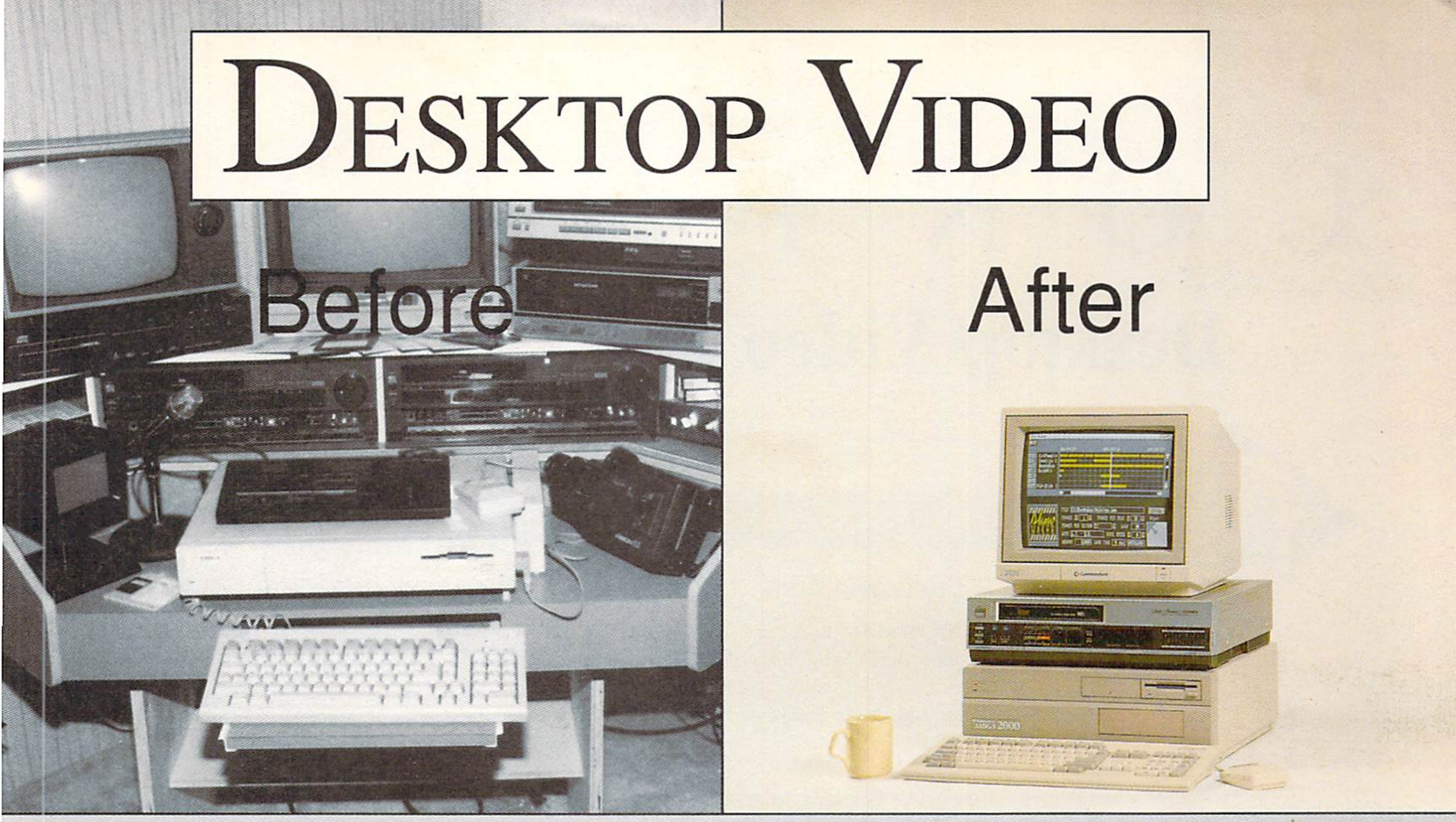
Set Up Your Own Desktop Studio

Best Buys!

- 10 Genlocks
- 8 Video Titlers
- 6 Sound Programs
- 4 Paint Packages

Plus Dozens of Tips From The Pros!

05
0 74470 19562 7



ShowMaker

The first *Complete* Desktop Video program

Up until now, making a "Desktop Video" with your Amiga meant you had a very crowded desktop. You needed editing VCR's, single frame controllers, and a lot of money and patience. It just wasn't possible to record a finished video straight from your Amiga. You could create the animations, stills, sound effects, and music, but there was no way to bring it all together, and most importantly, to easily synchronize audio and video. **Until now...**

ShowMaker is the Editing Suite for all your work, offering compatability with:

- DeluxePaint III
- Sonix
- Photon Paint II
- LIVE!
- FrameGrabber
- MovieSetter
- Deluxe Music
- ANIMagic
- Music-X
- and more

ShowMaker, the *first* with features like:

- Auto-sync of ANIMS and music *
- Smart load of ANIM while playing another*
- Built-in Video Titling for use *over* animation
- Interactive playback

This should give you an idea of what the future holds for your Desktop Video productions. To get the full picture (and music and animation and titling), ask your Dealer for a demonstration of ***ShowMaker***, or call Gold Disk for more information.

* Patent Pending

GOLD DISK

For more information, visit your nearest Amiga Dealer today, or contact Gold Disk at 1-416-828-0913

Circle 436 on Reader Service card

SPECIAL ISSUE 1990

CONTENTS

Desktop Video and Animation



THE FIRST TAKE

A Brave New World of Applications

BEST BUYS



Buyer's Guides, Reviews, Product Roundups, and Comparative Evaluations

COVER ILLUSTRATED BY ISTVAN BANYAI

TIPS

Hints, Techniques, and Tutorials from the Experts

THE WRAP

Final Frames in the AW *Animation/Video Special*

COVER PHOTOGRAPHED BY LARRY DUNN

STEPHEN ROBBINS, *Publisher*

DOUGLAS BARNEY, *Editor-In-Chief*
DAN SULLIVAN, *Executive Editor*
SHAWN LAFLAMME, *Managing Editor*
LOUIS R. WALLACE, *Senior Editor, Technology*
LINDA J. BARRETT, *Acquisitions Editor*
BARBARA GEFVERT TYSON, *Review Editor*
JAN JACKSON, *New Products Editor*
TIM WALSH, *Technical Editor*
GENE BRAWN, BILL CATCHINGS, DAVID T. MCCLELLAN, MARK L. VAN NAME, *Contributing Editors*

HOWARD G. HAPP, *Art Director*
ANN DILLON, *Designer*
LAURA JOHNSON, *Designer*
ALANA KORDA, *Production Supervisor*

KENNETH BLAKEMAN, *National Advertising Sales Manager*
MICHAEL MCGOLDRICK, *Sales Representative*
BARBARA HOY, *Sales Representative*
HEATHER PAQUETTE, *Associate Sales Representative, InfoMarket Sales, 1-800-441-4403, 603-924-9471*
MEREDITH BICKFORD, *Advertising Coordinator*
GIORGIO SALUTI, *Associate Publisher, West Coast Sales 1-415-363-5230*
2421 Broadway, Suite 200 Redwood City, CA 94063
SHELLEY HARMON, *Associate Sales Representative, InfoMarket Sales, 1-415-363-5230*

WENDIE HAINES-MARRO, *Marketing Manager*
LAURA LIVINGSTON, *Marketing Coordinator*
MARGOT L. SWANSON, *Advertising Assistant*
LISA LAFLEUR, *Executive Assistant to the Publisher*

SUSAN KANIWEC, *Customer Service Representative*
Publishers Assistant

PAUL RUESS, *Circulation Director*
PAM WILDER, *Assistant Circulation Manager*
800-365-1364

ROGER J. MURPHY, *President*
STEPHEN D. TWOMBLY, *Executive Vice President/Publishing Director*

DENNIS S. CHRISTENSEN, *Vice President of Manufacturing/Operations*
LINDA PALMISANO, *Typesetting Manager*
DEBRA A. DAVIES, *Typographer*

SUSAN GROSS, *Corporate Production Manager*
LYNN LAGASSE, *Manufacturing Manager*

LINDA RUTH, *Single Copy Sales Director*
JOHN T. CHILDS, *Single Copy Sales Manager 800-343-0728*
DEBBIE WALSH, *Newsstand Promotion Manager*

WILLIAM M. BOYER, *Director of Credit Sales & Collections*

AmigaWorld is an independent journal not connected with Commodore Business Machines, Inc. *AmigaWorld* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. U.S. subscription rate is $29.97, one year; $46.00, two years; $64.00, three years. Canada $38.97 (U.S. funds), one year only. Mexico $38.97, Foreign Surface $49.97, Foreign Airmail $84.97 (prepayment is required on Foreign Surface and Airmail subscriptions in U.S. funds drawn on U.S. bank). All rates are one-year only. Phone: 603-924-9471.

Postmaster: Send address changes to *AmigaWorld*, Subscription Services, PO Box 58804, Boulder, CO 80322-8804. Nationally distributed by Kable News Co. *AmigaWorld* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *AmigaWorld* assumes no responsibility for damages due to errors or omissions.

Professionals on

PROFESSIONAL PAGE



Bill Kidd
Teaching Master
George Brown College

The "pre-press courses of the PRINTING TECHNOLOGY DIPLOMA PROGRAM" at George Brown College use PROFESSIONAL PAGE to simulate pagination concepts as applied to the high-end electronic pre-press systems used in the graphic arts industry. Bill Kidd, Teaching Master in the Graphic Arts Division, introduces students to importing text, graphics and bitmap images to Professional Page. Then, through various assignments, "the students produce a 4-color workbook including pages, covers and ads which are typical of work that the George Brown graduate will encounter in the industry". Mr. Kidd praises the versatility of the software for cropping, positioning, colour controls, typography, importing data and speed.

Experts Choice
Best Desktop Publishing Software
-AmigaWorld, 1989

GOLD DISK

P. O. Box 789, Streetsville,
Mississauga, Ontario
Canada L5M 2C2
(416) 828-0913

Simply put, more professionals use *Professional Page* than any other desktop publishing program on the Amiga. And they use it for everything from creating simple flyers and brochures to producing full four color ads, and even publishing magazines.

Professional Page was the first desktop publishing program, on any computer, to offer true four color separations and it still leads the field. *Professional Page's* typographic and color controls are among the best in the industry and its level of production control is unparalleled.

And now, with the inclusion of AGFA Compugraphic's outline font technology, you can take advantage of *Professional Page's* capabilities without investing in a PostScript laser printer - output your pages to any printer - dot matrix, ink jet, or laser - at the highest resolution with smooth fonts, jaggie-free lines, and brilliant colors.*

When you combine these features with an intuitive user interface and a high reliability level, it is not difficult to see why *Professional Page* is the program of choice for the graphic professional.

So why not use the best? Call Gold Disk, today, at 1-800-387-8192 and order your copy of *Professional Page*, or stop in to see your local Amiga dealer.

* Graphics will print in full color on color printers or as 16 level grey scaled images on black and white printers.

J. K. Steele,
Freelance Graphic Designer

"*Professional Page* is opening doors for graphic designers and artists... especially free lancers like me. It cuts down layout time, keeps me out of the typeshop, and allows me to show my clients a greater variety of design options without costing a fortune."

Vel Evans,
President, Vellum Print & Graphic

"After years of preparing black and white camera-ready art for color printing, we can now design and compose in color and produce plate ready film."

PAGESTREAM Owners: Upgrade for Only $150 - Call 1-800-387-8192 For Details



Chief Concerns

The best in the business.



IT'S FUNNY TO hear companies and pundits from the other side of the market (IBM and Apple, to name two) talk about video and animation. To them, these are brave new worlds. Eventually, according to these vendors, you'll be able to put together a complete, cost-effective solution for real video and animation. Oh, really?

To us in the Amiga market, this stuff is old hat. If you don't believe it, just talk to Rick Rodriguez, who runs a cable TV station in Miami. He started doing real video work on Amigas four years ago when the Apple Macintosh was still in diapers. Rick has been going strong ever since, using the Amiga for graphics, character generation, live broadcasts, animation, and more.

The Amiga got an early edge in these markets because it happened to have the most sophisticated technology in the business for driving graphics and handling video. It still does, at a price that makes competitors wince.

You Amiga aces can skim the next paragraph or two, which talk about why the Amiga is so hot in these areas. Put simply, the Amiga was built with video and animation in mind. At the system's core is a processor from the Motorola 68000 family, arguably the best general-purpose microprocessors ever built.

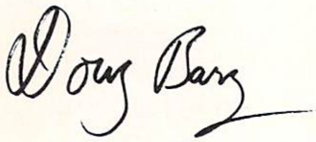
Surrounding this powerful chip (also used in supermicros, engineering workstations, and other sophisticated devices) are three custom chips designed to enhance graphics, sound, and video performance. These chips explain why the Amiga is snappy when processing graphics, while the IBM PC and Macintosh tend to be a bit sluggish.

The Amiga also has HAM (Hold and Modify), a special graphics mode that allows you to display 4096 separate colors simultaneously. This is what allows you to bring realistic video images into the machine, and create high-quality animations.

Another big advantage is the Amiga's inherent ability to produce NTSC signals, which are the same exact signals that television stations around the nation demand.

The biggest advantage is the inventive, committed, and sometimes bizarre group of third-party developers who have created a dizzying array of Amiga products. And of course, there are the users. These dedicated Amigans have used the machine to do things people thought were impossible, or at least unaffordable.

If you're new to the Amiga, this issue will help you to quickly become versed in the most sophisticated, fun products on computers today. And if you've been around the block a few times, our authors are sure to thrill you with tips and techniques that will make your videos and animations even more stunning. ■



ICON ILLUSTRATED BY JULIA TALCOTT

The Essence of Platinum!

Scribble! Platinum Edition

- ☐ 104,000+ word **Spellchecker**
- ☐ Scientific and Technical Supplements
- ☐ **Spell As You Type**
- ☐ Full User Dictionary maintenance
- ☐ 470,000+ word **Thesaurus**
- ☐ Multiple windows
- ☐ Color, Interlace & Overscan support
- ☐ Cut and Paste among documents
- ☐ **Mail Merge**
- ☐ Print **IFF Graphics**
- ☐ Clipboard Compatible
- ☐ Cartridge Font support
- ☐ 512K Required
- ☐ Not copy protected
- ☐ Free Technical Support
- ☐ User Friendly Manual

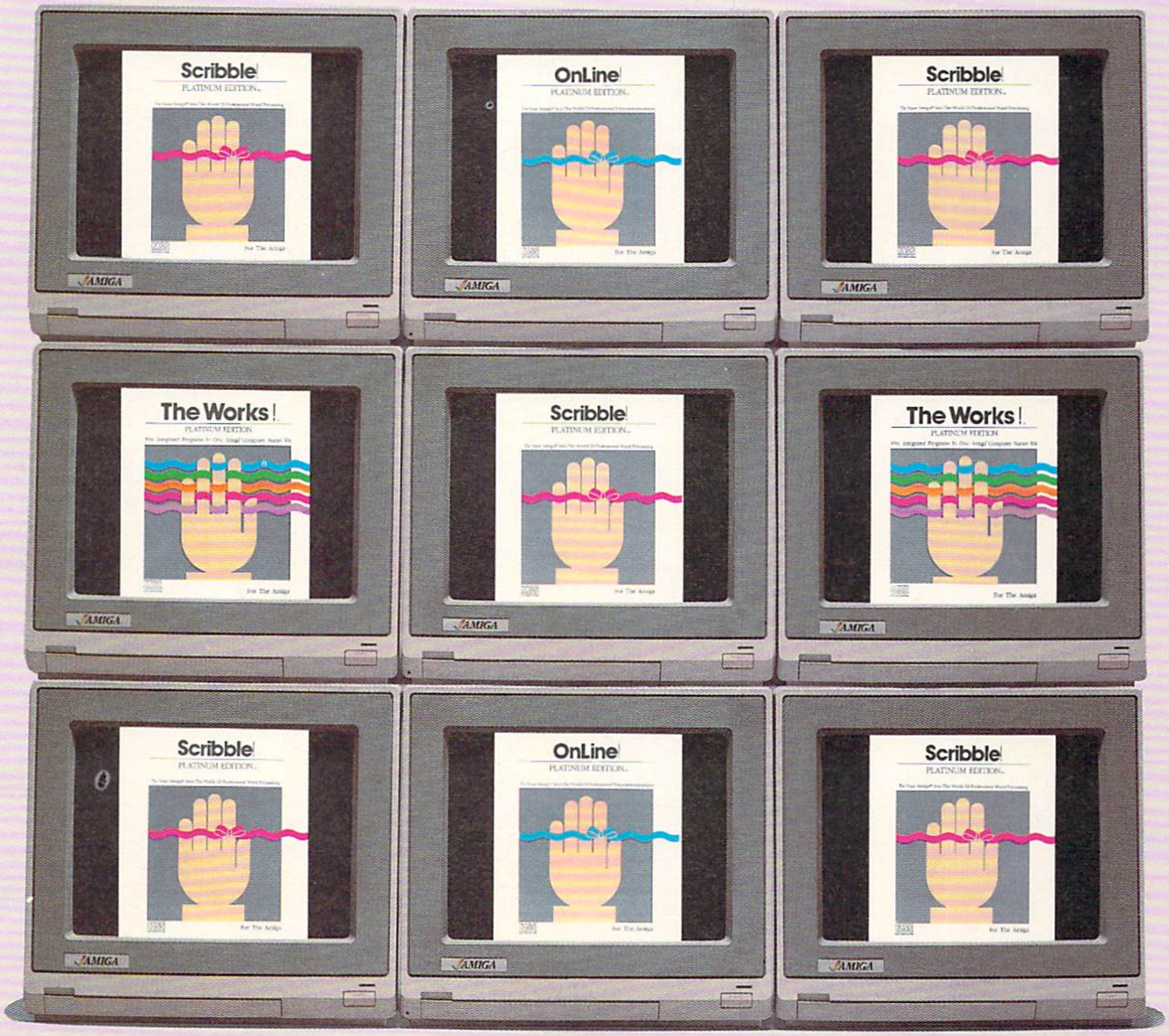
The Works! Platinum Edition

- ☐ **Includes Scribble! Platinum module**
- ☐ **Full featured spreadsheet module**
- ☐ Lotus 123 wks file compatible
- ☐ Macro-language
- ☐ 40+ built-in functions
- ☐ 68881 math co-processor support
- ☐ 8 graph types
- ☐ Sideways print utility
- ☐ **Flat file manager (database) module**
- ☐ Extensive math capability
- ☐ **Includes OnLine! Platinum module**
- ☐ Clipboard Compatible
- ☐ 512K Required
- ☐ Not copy protected
- ☐ Free Technical Support
- ☐ User Friendly Manual

OnLine! Platinum Edition

- ☐ **ARexx support**
- ☐ New Sadie Protocol (simultaneous chat and 2-way file transfers)
- ☐ Color, Interlace & Overscan support
- ☐ VT-100, -52, -102, TTY, ANSI-BBS, Tektronics 4010 emulations
- ☐ X-, Y-, Z-, WX-Modem, CIS-B, Quick-B, Kermit protocols
- ☐ 300 - 57600 bits per second
- ☐ **Multiple Serial Ports**
- ☐ **Internal Modem support**
- ☐ **Full Script Language**
- ☐ **User defined Macro keys**

MSS
Micro-Systems Software
12798 Forest Hill Blvd., Suite 202
West Palm Beach, Florida 33414
407-790-0770 FAX: 407-790-1341
Committed to excellence since 1978



Circle 442 on Reader Service card.



Power and Price:
Amiga vs. Mac and IBM

WHEN WE DECIDED to do a price comparison of Amiga video and animation systems versus Apple's Macintosh and the IBM PS/2, we knew who would win. That's why we did it. The Amiga is, quite frankly, the bargain of the century and the only PC that is truly appropriate technically for sophisticated video and animation applications.

Price is just one advantage of the Amiga. Specialized graphics chips is another. Other pluses include the ability to use large amounts of RAM (the IBM PC is still largely restricted to 640K), true multitasking, and NTSC compatibility. The Amiga has had these features from the get go, while competitors work to cobble together more expensive systems.

The Amiga, by virtue of its four year history in these areas, has an impressive array of products. There are literally hundreds of software titles that can be used for video and animation, with most prices under $100 (See our Buyer's Guide, p. 26). There are also dozens of hardware products—digitizers, genlocks, and frame buffers—at prices far lower than those of similar products in the IBM-PC or Macintosh markets.

We calculated how much it would cost to create a system capable of both video and animation. The prices listed are retail prices, so you should expect to pay far less, and the products chosen are all mainstream offerings.

A quick survey of IBM-PC-related products confirmed our initial suspicions. This stuff is expensive. Devices that allow PC-generated images to be put on videotape start at about $495. On the Amiga, this generally comes standard with the genlock.

Genlocking is also more expensive on the PC. US Video, for example, sells a $799 system for putting PC images on videotape. To genlock, you need that board plus the $399 Genlock Overlay Module. Total price is $1,198.

The IBM and Apple machines themselves are also more expensive. Many animators and video people can get away with using an Amiga 500, which starts at well under $1,000. After talking with professionals who have also used IBM and Macintosh computers, it's clear that only their fastest and most expensive machines can do the job. For IBM, that means the Intel 80386-based PS/2 Model 70. For Apple, it means the 68020 and 68030 family of Macintosh IIs.

The Macintosh in particular has long had a reputation as a pricey box. For animation, you need a color system, which on the Macintosh means one of their most expensive models. ■ *—Doug Barney*

AMIGA
Amiga 500, $799
or
Amiga 2000, $2199
A501 (512K memory upgrade), $199.95
Commodore 1084 Monitor, $400
Software (Animation): DeluxePaint III (Electronic Arts), $149
Titling: Video Titler (Sparta), $149
Genlock that also dumps images to video: SuperGen 2000S (Digital Creations), $749.95
Total: $2446.90–$3846.90

MACINTOSH
Macintosh II, $6,298*
Apple Color Monitor, $999
Apple color graphics card, $648
Genlock that also dumps images to video: Personal Vision board (Orange Micro Inc.), $2599
Software (Animation): Super 3D 2.0 (Silicon Beach Software), $495
Titling: unable to locate
Total: $11,039
*Apple is apparently phasing out the cheapest of the Macintosh color systems.

IBM
IBM PS/2 Model 70, $5495
VGA Monitor, $750
Putting images on video: VGA NTSC Recordable Board* (US Video), $799
Genlock: Genlock Overlay Module** (US Video), $399
Software (Animation): Autodesk Animator, $300
Titling: Video Titler (Entrophy Engineering) (VGA), $795
Total: $8538
*Includes VGA; outputs NTSC broadcast quality.
**Requires the VGA NTSC Recordable Board.

SupraDrive™

Simply The Best Amiga Hard Drive.

Before you buy a hard drive, look around. Look closely. Compare speeds, but also look at Interfaces...Software...Value. We think you'll agree that SupraDrives are Simply The Best Amiga Hard Drives. Here's why ...



SUPRADRIVE HARD CARD FOR AMIGA 2000

with revolutionary new **WORDSYNC™ INTERFACE**

Each SupraDrive for the A500/A2000: Autoboots directly from FFS partition • Interface allows super smooth video, sound, etc., with no rude interruptions for hard drive access • Compatible with Bridgeboard™, RAM, digitizers, other boards • Supports MS-DOS disk partitions with Bridgeboards • Installs easily • Pre-formatted & ready to use • Includes 2 floppy disks of software & clear, thorough manual • Fine tuned assembly language driver software • Blind data transfers improve speed 3x • Knowledgeable tech support • Interfaces also available separately

SUPRADRIVE FOR AMIGA 500

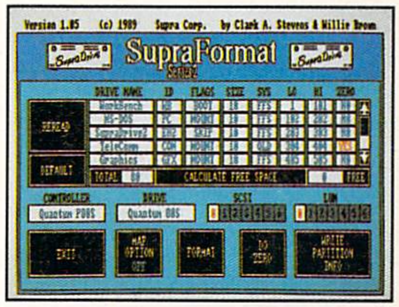
with **AMIGA BUS PASS-THROUGH** for unlimited expansion • **OPTIONAL 2MB RAM**



All Supra Products Are Made in the U.S.A.

Breakthrough Speed.

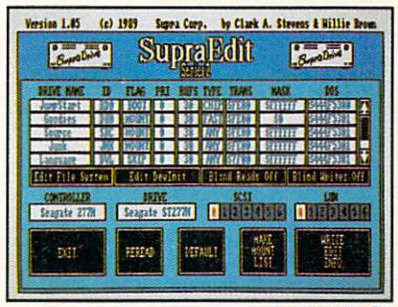
SupraDrives give you access times as low as 11 ms. and data transfer speeds of over 500K/sec. (Amiga® 2000) or 326K/sec. (Amiga 500). Features like full support of Workbench™ 1.3, the Fast File System (FFS), and multitasking make these drives *FLY.*



SupraFormat™

State-of-the-Art Interfaces.

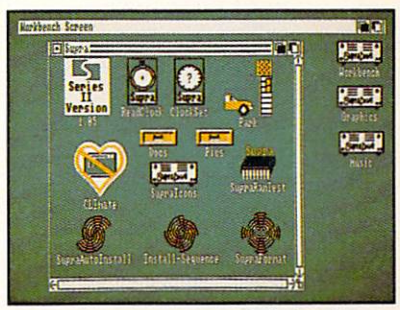
Supra's interfaces (included with every SupraDrive) give you innovative features no one else can match. The revolutionary WordSync™ Interface transfers 16 bits at once, which gives A2000 SupraDrives DMA speed without DMA hassle. The A500 interface passes the Amiga bus signal through to your other peripherals; without Amiga bus pass-through, your system is severely limited. And all Supra interfaces feature SCSI ports for easy daisy-chaining.



SupraEdit™

The Best Software.

After installing the drive, you'll be glad you have Supra's full array of powerful, easy-to-use software. SupraFormat makes formatting a breeze and lets you use up to 30 partitions and various file systems — FFS, MS-DOS®, Unix, Macintosh™, and more! SupraEdit lets you access low-level Amiga system information, and other included programs make using a hard disk fun and easy.



Included Software

Irresistible Value.

All this is available at a price you'll love. Look into it! Only Supra Corporation — an experienced company with a proven commitment to the Amiga and its potential — gives you such an attractive alternative: The SupraDrive. It's Simply The Best Amiga Hard Drive.

Ask your dealer for details, or call:

Supra Corporation

1133 Commercial Way Albany, OR 97321 503-967-9075

ORDERS: 1-800-727-8772 Circle 426 on Reader Service card.

SupraDrive, WordSync, SupraFormat, and SupraEdit are trademarks of Supra Corp. Amiga is a registered trademark and Workbench is a trademark of Commodore-Amiga, Inc. MS-DOS is a registered trademark of Microsoft Corp. Macintosh is a trademark of Apple Computer.



Glossary

Common terminology of the animation and video industry.

By Wayland Strickland

A/B Editing a type of video editing using two source recorders.

ADO (Ampex Digital Opticals) a device used in broadcasting to accomplish image transitions and special effects (page turns, mosaics, flips, and size variations) with video.

Algorithm a rule or procedure for solving a mathematical problem that involves the repetition of an operation.

Aliasing a common display problem with computer graphics, usually displayed as jagged or stair-stepped edges on diagonal lines.

Anim Format a standard format for storing animations that allows for almost real-time playback. Animations are compressed and only the elements that change from one frame to the next are saved. The current version is OPT 5.

Anti-Aliasing a technique that uses transparent pixels to hide or smooth jagged edges in computer graphics (such as around letters in character-generator programs or diagonal lines). The transparent pixels soften the transition between the foreground and background by interpolating intermediate shades of color between the two.

Bit Mapping a method for creating a graphic display by describing it in terms of pixels.

Cel a single frame (display screen) of an animation. The term originated in cartooning days when the artist drew each image on a sheet of celluloid film.

Character Generator (or CG) a dedicated hardware device that creates text for use with (or in) video productions. On the Amiga, software (also called video-titling programs) serves the same purpose.

Chroma the portion of a composite signal that provides the color.

Chroma Keying a widely-used process in film and video production, in which a subject (a person, for example) is filmed or taped in front of a blue or green screen. When the film is processed, the blue (or green) area is eliminated, leaving only the subject. The film then can be combined with another background, creating a singular image.

Color 0 the color that was previously specified to become transparent when the computer graphic is overlayed on a video signal via a genlock. Everywhere in the image that color 0 appeared is now replaced with the video signal.

Colorization the tinting of black-and-white pictures with one or more colors.

Composite Video a single signal composed of chroma, luminance, and sync. It is currently the U.S. standard for television.

Digitizer a hardware device that takes the analog video signal from a camera or VCR and converts it into digitally-defined pixels that a computer can display and modify.

Distribution Amplifier an amplifier representing two types of signals: audio and video. Both types accept a single input signal and duplicate it to provide three or more identical output signals.

Dithering a method of rapidly displaying one or more colors on the same or adjacent pixels, thus creating the illusion of another color.

Double Buffering a method of computer-memory allocation that creates smooth animation by using two or more separate memory locations: While the first displays an image, the second loads the next animation cel.

Encoder a hardware device that takes the individual components of an RGB signal (red, green, and blue) and adds both horizontal and vertical sync to create a composite-video signal. The Amiga 1000 has a built-in encoder; the A2000 and A500 do not.

Extra_Halfbrite mode the Amiga's 64-color mode, consisting of the shades in 32-color mode, plus one variant of each. You can access it from lo-res only.

Extrusion a method of creating a three-dimensional object from a two-dimensional shape. The edges of the shape are used to create side panels and a "back" side.

Field one-half of an interlaced video frame. The field display rate is 60 fields per second, twice that of video (30 frames per second).

Flying Erase Head a VCR and camcorder feature that combines the unit's erase head and the record head and provides cleaner edits. ►

Frame a complete video picture made up of 525 scan lines that are refreshed every one-thirtieth of a second in a standard NTSC broadcast. Each video frame is composed of two fields.

Frame Buffer a device used to capture, display, and store a video frame. The displays of many frame buffers are pixel addressable, meaning that a graphics program can produce higher-resolution graphics with the buffer than normally possible with the host computer.

Genlock a hardware device that extracts synchronization signals from incoming video and locks the computer's sync generator with that of the incoming video's source. The word is also used as a verb to describe the syncing of video equipment.

Gouraud Shading a smooth-shading algorithm, developed by Henri Gouraud, that averages the light-reflectance values of the polygons that make up an object, creating the illusion of a smoothly curving surface.

HAM Mode an abbreviation for Hold-and-Modify mode, which displays 4096 colors simultaneously.

Hidden-Line and Hidden-Surface Removal the process of deleting the lines and polygons of an object that are obscured by the parts of the object that face the camera. As these lines will no longer be computed, rendered, or saved, the image will display faster and consume less memory.

Hierarchical Motion the way in which the movement of one object (such as your shoulder) affects the movement of another, not necessarily adjacent, object (such as your hand).

IFF Interchange File Format; the Amiga's standard file format for graphics and sound. IFF/ILBM (InterLeaved BitMap) files store graphics, while IFF/SMUS files store sound.

In-Betweening (or Tweening) drawing the cels between the key frames of an animation sequence. Some programs use interpolation to do this automatically.

Interlacing a method of increasing video resolution in which the number of horizontal scan lines are doubled then refreshed alternately. NTSC-standard video is interlaced.

Key Frames the cels of an animation that depict the most important images or poses and serve as reference points.

Key Signal a black-and-white video signal used by broadcast or industrial switchers to "cut a hole" in the video. The hole is then filled with graphics (such as from a character generator) or other video. The key signal is often created by the genlock or a black-and-white camera.

Keyer a device (usually part of a genlock) that overlays the computer's graphics on top of video.

Light Source a theoretical point in three-dimensional space from where a light is to shine on the object or scene in a 3-D rendering program.

Luminance the portion of a composite signal that provides brightness.

Motion Blurring the deformation of an object in animation when traveling across the screen at great speed.

NTSC System the National Television Standards Committee's broadcast-video standard, used for television in the U.S. and Japan.

Overscan a feature (of hardware and software) that allows a graphics program to use the entire video display area, creating a borderless image on screen.

Paint Box a specialized hardware system that allows you to use a mouse or drawing tablet to create drawings for video or print.

PAL the broadcast-video standard for most of Europe (minus France, which subscribes to the USSR's SECAM standard).

Phong Shading a smooth-shading algorithm, developed by Phong Bui-Tuong, that incorporates diffused reflections and specular reflections to create a smoothly-curving surface with light-reflecting highlights.

Pixel (Picture Element) a point of light that represents the smallest amount of displayable information in computer raster graphics.

Raster Graphics graphics based on the raster display, in which the electron beam of the CRT scans each line in turn, lighting only those pixels where information is stored.

Ray Tracing a method whereby one or more light sources are assigned to a specific point while the computer traces the path of each "beam" of light to its conclusion as viewed from the eye, complete with reflections and shadows.

Real-Time Playback the smooth display of an animation without delay (such as for disk accesses) at a logical speed for the on-screen action.

Reflectance Mapping an algorithm for causing the surface of an object to display a realistically distorted reflection of the background scene or any other texture map.

Resolution the number of pixels that can be displayed horizontally and vertically on a video screen.

RGB Red, Green, Blue; a computer's method of displaying colors as three separate signals instead of the combined form composite video uses.

RS-170A a video industry standard to insure proper synchronization and levels of video signals and components.

Single-Frame Animation Controller a device used with an industrial- or broadcast-editing VTR that reads time code from the videotape and edits one or more frames when instructed to by the host computer. The editing VTR must have a controller port through which the single-frame controller or an editor may control its functions. ►



Circle 408 on Reader Service card.

SMPTE Society of Motion Picture and Television Engineers; an organization comprised of engineers from the film and television industries that meets regularly to discuss improvements to the existing technology. SMPTE also publishes a monthly journal for its members.

Subcarrier Phase a control by which the chroma can be adjusted between zero and 360 degrees, similar to a television's Hue adjustment.

Switcher a device through which multiple video signals are sent, manipulated, and assigned.

Sync Generator a device that generates various types of video-synchronization signals, which are used to genlock (sync) video equipment together.

Sync Signal the portion of a composite-video signal that coordinates the transmitter's signal with the receiver's display.

Time Code a system of accurately numbering video frames. Probably the oldest version, SMPTE Time Code is an audio pulse recorded onto one of the available audio tracks of the videotape. The second type (and the most reliable) is called Vertical Interval Time Code (VITC) and is recorded with the images onto the actual video frame. VITC is also capable of identifying individual odd- and even-numbered fields.

Vector Graphics graphics based on a vector display in which objects are made up of a combination of lines and polygons.

Vectorscope a device designed to monitor chroma levels and subcarrier phase.

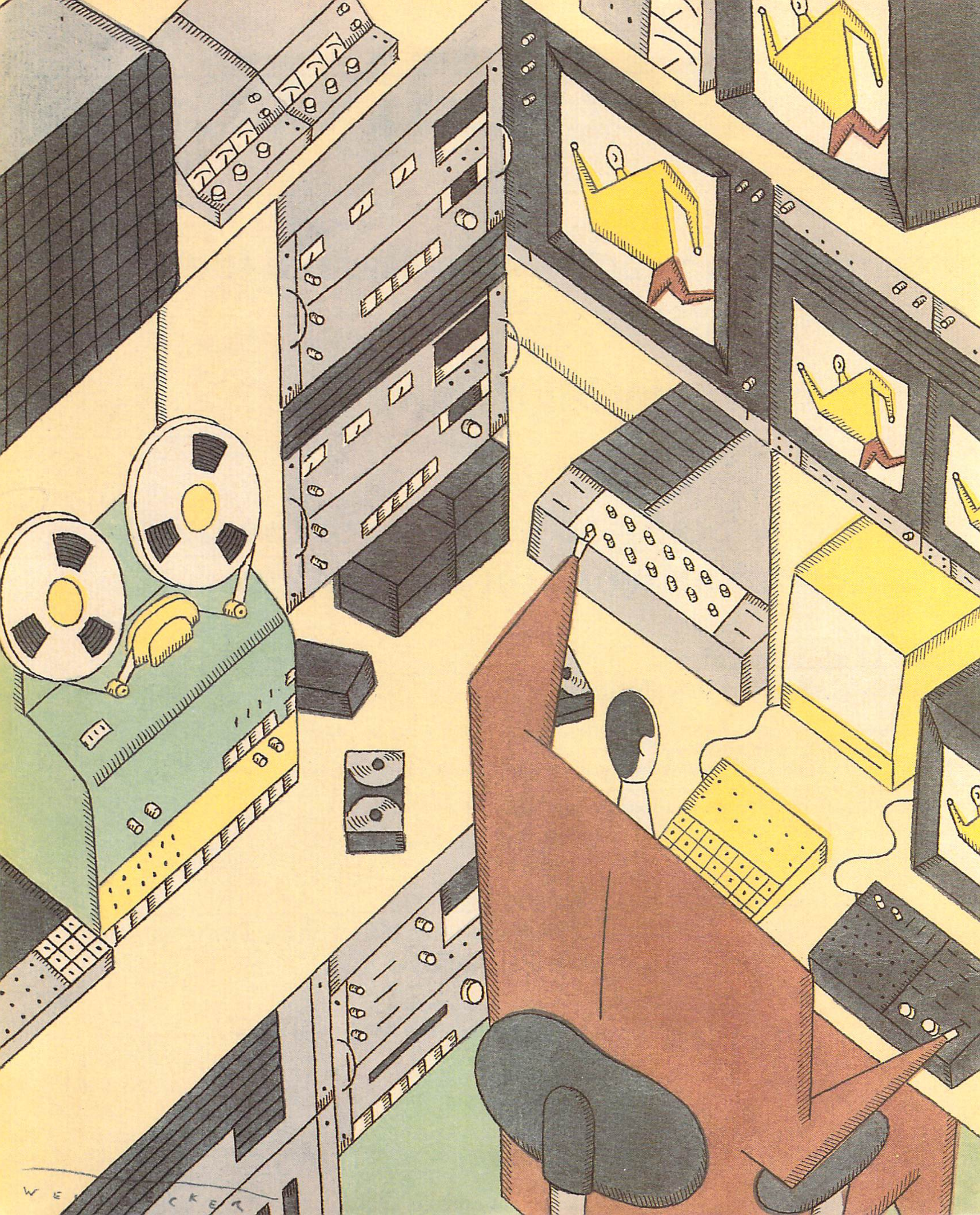
VTR Video Tape Recorder; the professional counterpart of a consumer VCR (video cassette recorder).

Waveform Monitor a modified oscilloscope that is designed to measure information (such as luminance, chroma, and sync) contained within a composite-video signal.

Wireframe a way of rendering an object quickly. The object is displayed in a series of lines only, with no color or surface detail.

Y/C a term used to describe the separation of luminance and sync from chroma. In the near future, this method may eventually replace composite video. This is the same technique used to achieve a slightly better and cleaner picture in ED-BETA and Super-VHS (S-VHS). A variation of this technology has been used with ¾-inch U-MATIC VTRs for years. ■

Wayland Strickland is a producer, director, writer, and graphic designer of television presentations for WKCF-TV 68 in Orlando, Florida. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*





Setting Up Shop: The Amiga-Based Studio

Whether you are a graphics artist, videographer, or simply a dabbler, we'll show you what you need to build a powerful and profitable studio around your Amiga.

By Geoffrey Williams

BEYOND ALL THE hype, is the Amiga really a practical alternative to expensive video equipment? Unreservedly, *yes*. With the Amiga as the centerpiece of your studio, you will save money by not having to buy a lot of additional hardware. It can serve as a character generator, a special-effects generator, an editing controller, and as a graphics-and-animation workstation. It can also handle bookkeeping, word processing, and desktop-publishing promotional materials for your studio.

Even with all the money you will save, you can very quickly invest considerable amounts acquiring additional software and hardware, so you must carefully plan your purchases. The key to compiling the perfect system is to start with a minimal studio, and build it up over time to meet your more specific needs as they evolve.

CHOOSE YOUR SPECIALTY

You must decide first what you want to start doing with your studio that will generate revenue to buy more goodies. For an artist, one of the easiest ways to get into the business is to create graphics (credits, title animations, and so on) and record them on the beginning or end of a tape before or after the rest of the production is shot. Because you do not need to do any additional editing, this gives you a first-generation tape of your home movies or simple business presentations for a low initial investment. If you want to get your hands dirty with the editing process, video titling, and animation, the cameras and genlocks you need will drive up the investment.

Besides your Amiga, the common component to all studios is a VCR. If you do not plan to copy from one VCR to another to edit or duplicate tapes, a four-head consumer VHS VCR will give you adequate results. If you do plan to do dubbing and editing, you will need much better quality; expect to pay $1500 or more for a recorder.

ED-Beta, S-VHS, and Hi-8 are all good choices for an entry-level editing recorder. (For a thorough discussion of these machines and the basics of recording, see "Cutting the Red Tape," p. 42.) These recorders have many editing options and offer high enough quality so that multiple generations of a tape are possible. Call around to local editing studios to find one that has ED-Beta, S-VHS, or Hi-8 machines linked to a higher-end-format recorder such as Betacam. Known as interformat recording, this system enables you to use their facilities to copy your finished work to a better format (with minimal generational loss), and then edit it further on better equipment.

THE BASIC STUDIO

The simplest and least expensive way to start is with a Cuts Only studio, which will give you limited editing capabilities (from one VCR to another, or from the ►

computer to a VCR). All you need is a good VCR, an encoder, and your Amiga. My suggestion would be to buy a transcoder instead of a straight encoder. A transcoder will translate the Amiga's RGB signal into both NTSC standard (composite) and Y/C (which encodes color and luminance signals separately) signals so that you can use it with S-VHS and other Y/C supporting formats. For software, start with a paint program, a HAM paint program, an image processor, and a character generator.

The paint program of choice, without a doubt, is DeluxePaint III (Electronic Arts, $149.95). Its many features make it one of the most powerful video-graphics and animation tools available; master it and you will go far.

While many artists do not like to draw in HAM mode, it is great for assembling graphics created in other paint programs. Another advantage of HAM is that it adds an extra color between two very different shades—exactly what you need to overcome NTSC's inability to handle adjacent bright and dim pixels. I constantly use both Photon Paint 2.0 (MicroIllusions, $149.95) and Digi-Paint 3 (NewTek, $99.95). (For more details on Amiga paint programs, see "The Gang of Four," p. 48.)

An image processor, such as Butcher (Eagle Tree Software, $37) or PIXmate (Progressive Peripherals & Software, $49.95), is the quickest way to tweak an image to make it look good on tape. These programs are tremendously useful for reorganizing color palettes and making global palette alterations. (For more information on their features, see "Global Operations," p. 112.)



John Kohan-Matlick in his video IT studio, which boasts an A2000 hooked to D2 digital tape machines.

Most of the video-production work done on the Amiga is for video titling. While DeluxePaint III is one of the best video titlers around, you also need a program with the capabilities of a traditional character generator (known as a CG). A CG lets you call up screens of text in random order, and preprogram each screen so that it appears in a specific way (spiraling on, fading in, wiping left to right, and so on). Because of their interactive nature and the ease with which changes can be made, they are much better for live studio work and last-minute changes. One of the main features to look for in a video-titling program is good anti-aliasing. All the characters in each font will have shades of a lighter color around them. This reduces the apparent jagginess of the font and makes the text look much smoother. (For a comparison of character generators, see "Say It with Style," p. 62.)

You should also have a large collection of video fonts. Fonts smaller than 20 pixels high or with single-pixel line widths are useless for video, so look for larger, bolder fonts for your video work. The Masterpiece Font Collection (AROCK Software, $199) is a good investment, offering over 110 video fonts, along with clip art and ColorFonts. You should also have the Kara Fonts disk sets (Kara Computer Graphics, $69.95 to $79.95 each). Each font is finely crafted in eight colors and they look gorgeous on video. They come in styles ranging from granite and marble to glass and chrome. If you want very professional-looking text, get them.

THE ANIMATION STUDIO

If you want to do animation, I suggest you upgrade your system to at least three megabytes of RAM and add the new Super Agnus chip that supports one meg of chip RAM. Animation is memory-hungry, so more never hurts. You also need a hard drive, as animations can quickly become larger than what a single floppy will hold. New software is in the works that will let you use the megabytes of storage in your hard disk as memory, allowing you to play animations larger than the amount of available RAM.

The workhorse of this studio is the software. After testing many animation programs, DeluxePaint III came out the clear winner for its combination of ease of use, power, and animation-playback speed. (For a tutorial on using DPaint for animation, see "How To Make a Fish Sneeze," p. 82.) The absolute fastest hi-res animation player is Photon Video: Cel Animator (MicroIllusions, $149.95), but it needs well over three megabytes of memory to perform to its full potential. For special effects and transitions, check out Page-Flipper Plus F/X (Mindware International, $159) and ANIMagic (Sparta, $279). Restricted to or best suited for lo-res, Fantavision (Broderbund, $59.95), MovieSetter (Gold Disk, $99.95), and Zoetrope (Antic, $139.95) are all primarily tweening programs. They are not appropriate for most professional applications, but are great for quickly roughing out and testing ideas.

HAM programs come in handy, too. Although it seems contrary to logic, a HAM animation will run faster than a hi-res 16-color one. If an animation plays back too slowly, copy each frame into Photon Paint 2.0, which translates the hi-res images into HAM automatically. You will see no difference in the look of the animation, but it will play much faster.

If you need to manipulate drawings created outside the Amiga, such as a company's logo, you will need a video digitizer and camera to import the image. You can then load it into your animation program for manipulation. Digitizers can also save you a lot of drawing time; simply digitize a scene for the animation's background. I recommend the Digi-View system (NewTek, $199.95). You cannot go wrong with its combination of low cost and great results.

Genlocks serve a similar, but more immediate purpose: They let you overlay graphics on live or prerecorded video. If you have an A1000 or A500 and are upgrading to an A2000, do not dispose of your original machine! Instead, buy a genlock and create more complex productions by overlaying one animation on another. Because both images are coming in live, you will not have any generational loss when dubbing to tape. You can combine HAM and hi-res images, make animations with different resolutions or different color palettes, and far exceed the limitations of a single machine. You could even genlock character animation on top of 3-D backgrounds. A slow 16-color animation will run considerably faster if separated into two eight-color animations genlocked together. (For advice on which of the available genlocks is right for you, see "Who's In Sync?," p. 54.)

The Anim format gets bogged down by a lot of action in your animation. When you have a hi-res 16-color Anim with many moving objects, it will play back at the speed of dripping molasses. If you want to play back your animation as fast as possible, the only way to dub it to tape is with single-frame recording. You will need an animation controller that lets your Amiga talk to the VCR, software to drive the controller, and a VCR capable of single-frame recording—a pretty serious investment.

While some 3-D rendering programs can access specific animation controllers, for general use you will need Photon Video: Transport Controller (MicroIllusions, $299.95). The software has hooks into several Amiga programs, such as Photon Video: Cel Animator, to control the display and transfer of each image automatically. It also has its own display program to animate individual frames of an animation.

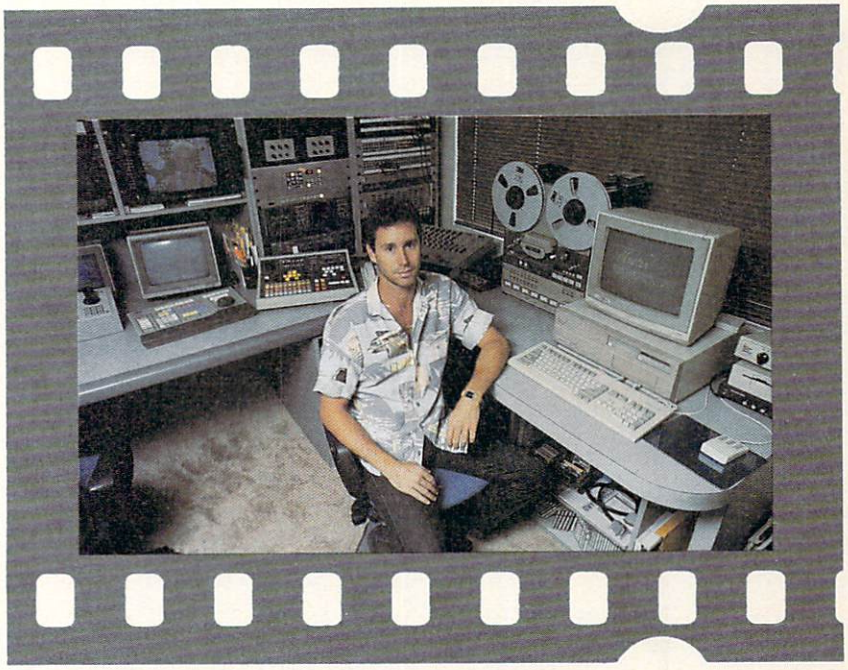
The best animation controller I have seen is the V-Lan from VideoMedia. It supports standard SMPTE time code (most others use a proprietary format), and can also be used as an edit controller. A basic V-Lan system will cost you around $2500. You must also have a V-Lan supported VCR, so add another $3000 plus to your bill.

The 3-D Animation Studio

Be prepared to pack in even more megabytes of memory for 3-D animation, as rendering eats memory rather quickly. You should also have a 68020 or 68030 accelerator board with a 68881 or 68882 coprocessor and at least two megabytes of 32-bit RAM to speed up your machine. Commodore, Great Valley Products, and IMtronics all make likely canidates that cost between $2000 and $4000. 3-D rendering on a slow machine is fine for hobbyists, but not when you are trying to meet a deadline. With an accelerator, projects that might take days to render on a stock machine can be done in hours.

You should also look at the Syquest removeable-media hard-drive system. You can buy additional cartridges for about $100, each of which will hold 20 megabytes. When one fills, simply insert another; you can inexpensively upgrade limitlessly. The cartridges also make good disaster insurance. During the rendering process, the system accesses your hard drive periodically for hours. If something crashes the drive, you can pop in another cartridge, restart your rendering, and worry about fixing the crashed one later. Both Great Valley Products and Supra Corporation make controllers for the Syquest drive.

To create something to render, you need software. The two leading 3-D modeling programs—Sculpt-Animate 4D (Byte by Byte, $499.95) and Turbo Silver 3.0 (Impulse, $199)—stand out in different areas. Turbo offers more light sources, flexibilty, and better rendering, but Sculpt counters with a thorough manual, a more accessible interface, and simpler animation controls. A common solution is to buy both packages, render your objects in Turbo Silver, then import them to Sculpt-Animate via InterChange ►



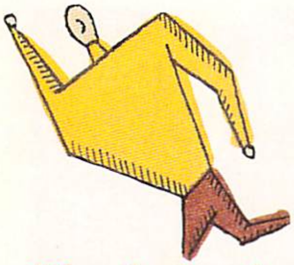
Editor Dave Weiss from Masters Communications pairs an A2000 with Betacam and ¾-inch recorders.

(Syndesis, $49.95) for animating. An interformat translator, InterChange is invaluable. To save designing time, you can use it to import sets of 3-D objects available commercially and in the public domain. By the same token, InterFont (Syndesis, $119.95) lets you exchange three-dimensional fonts among programs, or design fonts of your own.

THE VIDEO EDITOR

To edit video, you must copy the sections you want to use from the working tape onto a master tape. In traditional editing studios, a specialized computer called an edit controller helps synchronize this copying process. You can spend from a few hundred to a few thousand dollars on an edit controller for your studio or use your Amiga. The Amiga's multitasking environment is well suited to the purpose, as you can run music and animation software as you edit.

There are several methods of editing. In a cuts-only studio, you simply copy sections from one tape onto a master. In an A/B roll editing environment, you control two source VCRs that are recording onto a third recorder. This makes editing much easier, and lets you genlock animation recorded on one VCR with live footage onto a second VCR. You can also use special-effects generators to add dissolves and wipes between the two source VCRs. Control-track editing uses the control track recorded with the video to monitor the tape's position and to help guide the heads during playback. This is accurate within a few frames, but tape-stretching and other factors can cause it to drift. The only way to know exactly where you are on a video tape is to use SMPTE time code, which is usually recorded on an audio channel. Time code gives each frame a specific number.



The Amiga is opening up advanced video capabilities to a new breed of videographers and animators.

While time code is the most accurate way to edit, it can be expensive because you must have a high-quality, time-code compatible VCR, and you need a time-code reader/generator. The TCRG 102 (Micro-Illusions, $799) with its software driver generates a time-code display in several sizes that can be genlocked over recorded video (called a window dub). The software also has an ARexx port, and macro keys that let you insert the current time code into a word processor or edit list automatically.

The least expensive editing system currently on the market for the Amiga is the MediaPhile system (Interactive MicroSystems, $195). It works with consumer-level VCRs by using the infrared remote-control signals to control the recorder. (Call the manufacturer for the current list of compatible VCRs.) You teach the software the remote-control codes of your VCR by pointing your remote controller at a special sensor that transmits the codes to the computer. To install the system, you have to open your VCR and solder in place three wires from a cable that allows the Amiga to keep track of the tape position.

One of MediaPhile's unique capabilities is a low-cost form of single-frame recording for Videoscape 3D (Aegis, $199.95) and Sculpt-Animate 4D animations. The system records about 30 frames of each cel of your animation. After each cel, the recorder rewinds a tiny bit, and records the next animation cel for 30 frames. The software lets you adjust the rewind timing for your recorder, and you can come very close to single-frame accuracy. It also has configurable keymaps to make keyboard commands compatible with the program (such as DeluxePaint) with which you are multitasking.

The MediaProcessor software ($149) that accompanies MediaPhile allows you to create an edit list detailing the start and end points of sequences on the working tape you want to record to the master. You can save, print, and edit the list, which can contain up to 1000 entries. You can preview your edits before actually recording them, automate an entire series of edits, and even adjust the preroll for very smooth edits.

Because the MediaPhile system works with anything that operates from an infrared controller, your Amiga can control laser disks, CD players, special-effects generators, and audio equipment. You can also control two VCRs for live presentations, showing the images from one as the other cues up automatically. While the software is mouse-based and easy to use, the manual is less than helpful. Considering the low cost, however, it is worth the extra trouble to figure it out.

For professional work, you may need to consider an industrial-quality VCR, which generally offers better picture quality and advanced features, such as time-code capability. For editing on industrial-level machines such as the Panasonic AG-7500, you should invest in RGB Computer & Video Creations' AmiLink ($1995) software, which uses the V-Lan from Video-Media as the controller. AmiLink gives you such features as A/B roll, GPI burst, and switcher control, along with all of the traditional editing capabilities. It has an edit list, and is compatible with Micro-Illusions' Edit Decision List Processor ($499.95). The editor is able to control three VCRs on line, and the system can drive up to 32 devices. You can even access the jog and shuttle controls via the mouse or joystick.

If your budget will not expand to accommodate professional-quality machines, you can have the best of both worlds by using the Edit Decision List Processor (EDLP). It keeps track of all of the edits you

make on your equipment in an editable list. You can then transfer the list to a professional editing system at a local studio to duplicate exactly the edits you made at home. Choosing your edit points is the most time-consuming process of editing. Because renting time in these studios is expensive, planning ahead with an edit-decision list can save you a lot of money.

While easy to use, EDLP was written with professionals in mind, offering many powerful and unique features. It has a word processor, automatic and manual renumbering of the edits, on-line help, and the ability to work with time-code generator/readers with RS-232 ports. The unique automatic edit-list generation option reads an edited cuts-only tape and logs all of the In and Out points automatically. It also comes with a collection of utilities, such as Timecalc, which calculates time-code values, and Time Manager, which keeps track of up to 20 different pieces of equipment and the hourly rental fee charged on each. Time Manager is a great help in monitoring costs while in an editing studio.

The Audio Recording Studio

No production is complete without sound effects and music, and you can do both on the Amiga very inexpensively.

While many disks of digitized sound effects are available, your best bet is to buy a sound digitizer and a compact disc player. Compact discs full of special-effects sounds recorded at very high quality are readily available, and a single disc can hold over 70 minutes of sounds. Choose the ones you need for a project, digitize them, and adjust them with a sample editor such as AudioMaster II (Sparta, $99.95). You can change the pitch of the sound, and lengthen, shorten, or manipulate it in countless ways. Check any of the major electronic-music magazines for sources of sound effects on compact discs.

Several animation programs allow you to sync digitized sound effects to animations. The cheapest alternative is View version 1.3 from Mike Hartman. A public-domain program, View also allows you to sync digitized sounds to specific frames of an Anim file. Animation:SoundTrack (Hash Enterprises, $119.95) is a mini-sound studio and a fully-multitasking animation player with intertask communication, all in one package, letting you very accurately synchronize sound to animation.

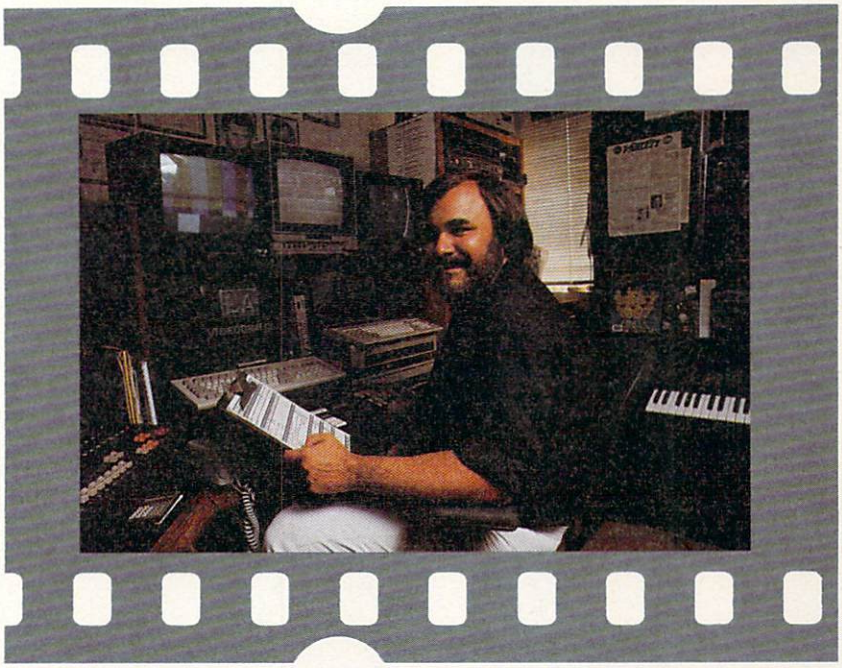
The traditional way to add music to videos is to use a music-library service. You buy several compact discs of production music for which you pay a licensing fee to use in your productions. Fees can vary from a couple of hundred dollars to several thousand dollars. Most video magazines will have ads for these services.

With a complete MIDI setup, the Amiga is perfectly capable of creating entire scores for video projects. With Music-X (MicroIllusions, $299.95) you can even sync to time code and incorporate sound effects created by AudioMaster.

If you do not want to invest in all the extra MIDI equipment, your options are rather limited. Most music-composition programs that use Amiga-generated sounds follow the IFF instrument standard, which offers mediocre-sounding instruments. Sonix (Aegis, $79.95) bypasses the IFF standard, however, and offers very high-quality instruments, while with AudioMaster you can even make your own instruments. Although Sonix is a very limited composition tool, Music-X supports Sonix-format instruments, so you can mix and match the functions. (For more information on combining sound and animation, see "Play It Together, Sam!," p. 68.)

Now You're In Business

The future looks bright for the Amiga as a video-editing tool. In a recent survey, the Amiga had already captured almost 25% of the video-titling market, and an astounding 75% of the 3-D-rendering market (even over dedicated systems). With the promised introduction of advanced graphics boards with higher resolution and more colors, and sophisticated special-effects devices coming from NewTek (Video Toaster) and Digital Creations (V-Machine), the Amiga is opening up advanced video capabilities to a new breed of videographers and animatiors who would otherwise be priced out of the marketplace. *(For addresses and phone numbers of companies mentioned in this article, see the Company List on p. 128.)* ■



Larry Rosen surrounds his A2000 with a Betacam recorder, Magni genlock, and MIDI equipment in his L.A. Videograms studio.

Geoffrey Williams is Executive Producer for Creative Business Communication and head of the Amiga Video-Graphics Guild. Write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

PHOTOGRAPHED BY WIDE WORLD PHOTOS



ILLUSTRATED BY STEVE LYONS



Powerful Persuasion

Putting Animation and Video in Your Presentations

Innovative Amiga products and techniques are taking presentations out of the boardroom and away from the static slide-projector mind-set responsible for their dullness.

By Oran Sands III

THINK OF THE word "presentation." Does your mind concoct images of darkened and smoky corporate boardrooms with executives nervously fidgeting with their Cross pens? How about a lone expert holding forth from a podium, droning on incessantly while occasionally changing his stale slides? If the answer to either question is yes, you probably do not use an Amiga. Yet.

Amiga users have an entirely different notion of presentations. In fact, there are precious few Amiga software packages designed to produce standard "business" graphics as in the IBM world. Fortunately, not all of us need to produce these sorts of boring pie charts and bar graphs. The Amiga, with its ability to handle animation, video, and sophisticated color images, is a more active presentation system.

Presentation Scenarios

LET'S LOOK AT a few scenerios to see how we might use the Amiga for more non-traditional styles of presentation. After that, we will make a brief survey of some Amiga software that can help us get the job done.

The shopper put down her shopping bag, hoisted her child into her arms and began to read the TV screen. After glancing over the selections, she pressed a button and began to view the sale items for the day, which were combined with a video showing how they can be prepared. She then asked for a printed list of all of them and walked off into the mall.

Our young shopper was probably intrigued by the color graphics and music that came from the kiosk. Most importantly, she was captivated by the video pertaining to products she selected.

The Amiga can admirably perform this sort of task. Its graphics, video, and music can easily entertain the most jaded viewer. Putting together an interactive slide show or video system has never been easier with all the authoring/slide-show/hypermedia programs now being offered.

The professor cleared his throat and began to draw a diagram to explain the point he'd just made. He diagrammed the chemical process and then simply cycled the picture's colors to show the flow. Almost magically, the entire class began to stir with enthusiasm.

Unfortunately, our professor is a rare breed. The most common lecture tools in schools are still the overhead projector or the blackboard. These tools remain popular because they are cheap, and allow the teacher to improvise. But think what that teacher could do with an Amiga and DeluxePaint III (Electronic Arts, $149.95)! He could not only write his material but also create movement with color cycling to further enhance the lesson. Animations with mov- ►

ing brushes, prepared the night before, could also be shown at the appropriate time to give the students a better chance at grasping the concepts. And even better, all this can be saved to be used again for the next class or the next semester as well.

The real estate agent scanned his client's wish list and then clicked the mouse pointer on "split-level" and "Meridian-Kessler neighborhood." Instantly his client saw there were three listings corresponding to his desires. The agent clicked the mouse pointer on the red house and was presented with a digitized image along with the information regarding its square-footage, number of baths, and other household specifications.

This presentation indicates how the Amiga can help people in making choices. Although there are numerous programs that could be used in the above example, my choice would be Superbase Professional 3.0 (Precision, $349.95). Yes, it *is* a database, but its ability to sort data, use IFF images, and to customize user interfaces makes it a perfect choice for this application. And you won't find it in the presentation software section of your computer store.

Some Amiga Presentation Software

THE BEST THING about Amiga-based presentations is that they can be immensely interactive.

Here's a run down of some of the packages that make the Amiga unmatched for active and exciting presentations. *(See the Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)*

Lights! Camera! Action! (Oxxi, $79.95) combines both graphics and sound with movement for an effective presentation. It is capable of using all of the resolutions the Amiga offers, as well as incorporating Anim files. You can change images with a variety of transitions and variable timing. You can also buffer them for smooth changes and less waiting. You can run sequences automatically or manually. Sonix (Oxxi, $79.95) scores or sounds may also be triggered by the program at predetermined times for a presentation with that touch of class.

PAGEflipper Plus F/X (Mindware International, $159) is an extremely capable program originally designed for compiling complex animations, but it is very suitable for presentations. It operates with a fast, easy interface that uses very little chip RAM in order to leave more room for your presentation imagery. It automatically generates a script file that can be edited manually or changed via the user interface. Numerous transitions are available or can be customized. You can run animations forwards or backwards, and loop or step through them manually as desired. You can even combine animations to run simultaneously if properly designed (and the manual has excellent tutorials for all features). There is a lot of power in this small package.

Elan Performer (Elan Design, $59) has got to be the premier package for giving live presentations. This is the only package designed for actual live performance using the Amiga. Unlike with many other programs, you can randomly access images and animations or run them in sequence. You can also randomly access partial sequences. Every key on the keyboard can be assigned to an image, an animation, or an environment (a group of assigned keys), which allows you to "nest" topics in your presentation. As a presenter, you can show your animations and step through them frame by frame, forwards or backwards, or design them as stand-alone presentations. This is one of the best presentation tools I've ever used.

TV*Show (Zuma Group/Brown-Wagh, $99.95) is incredibly easy to use and allows you to make selections by mouse and requesters to choose images, transitions, and timing intervals. You can activate picture changes manually or by setting dwell times for a presentation that runs automatically. The new TV*Show 2.0 is due out soon and promises even more features.

If money is a constraint, the public domain holds several top-notch programs for presentation work. *(See "Something for Nothing: Video/Graphics Software in the Public Domain" on p. 76 for details.)*

Titling or character-generation programs can be very useful for creating presentations. These programs excel at displaying text, usually combined with IFF pictures. Almost all titlers and character generators will allow movement of the text or transitions between the "pages" of information, which can go a long way in holding the interest and attention of your audience. *(See "Say It With Style" on p. 62 for a thorough discussion.)*

Interactive presentations require the ability to randomly access information or at least direct the viewer along specific, predetermined pathways. "Authoring" programs provide the answer. Used primarily by educators to prepare computer-assisted instructional modules, such programs also lend themselves to preparing other, less lofty types of presentations such as our shopper's mall guide. Until recently, most authoring programs were very expensive and ran on computers that provided only screen text and extremely primitive graphics. Given the Amiga's excellent graphics capabilities, it is difficult to imagine why it has taken so long for someone to write an authoring program for the Amiga.

In its own way, **The Director** (Right Answers Group, $69.95) has been filling that void for the past two years. Billed as an animation program, it is really a programming language with heavy emphasis on graphics and sound. It allows for user input via mouse and keyboard and its BASIC-like language allows for conditional branching. These two features are the basis for any authoring package. While many used



Presentation Tips and Techniques

PREPARING PRESENTATIONS IS a large part of my job. In fact, my department creates over 40,000 slides per year. I wish I could say that all those presentations were lively, witty, and informative, but I'm sure a good many were temporary cures for insomnia. The difference betweeen a good presentation and a bad one is forethought and proper execution. Here are some hints and tips to help you create more effective and active presentations.

Color and Video

The Children's Television Workshop, the producers of *Sesame Street*, did a great deal of research on the effect of color on viewers. They found that green is reassuring, red alerts the viewer, and orange is good for preparing the way for new information. A well-prepared graphic should not detract from the message; it should bolster it.

When preparing Amiga pictures for use with television monitors or projectors, take care not to put tiny detail into the picture. The Amiga's graphics can easily exceed the bandwidth of many display devices. Make your images cleanly and try not to use any fully saturated colors (i.e., colors exceeding 12 on a scale of 0–15). Red is a horrible color to use with video. In composite it will smear terribly.

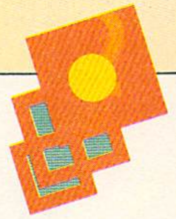
If your video projector has RGB or component (S-VHS) input options, then use them! If you are using a video projector, though, avoid pure blue colors; they don't project well. If you already have graphics that contain blue, change the blue to cyan by adding some green, which projects very well. Many projectors can handle non-interlace images, which will appear to have more vivid colors.

Amiga Hints

There are many ways to conserve your chip RAM, thus allowing for more animation or pictures. Create your images with as few colors as possible. A new bitplane is allocated every time you double the number of colors in your palette: One plane for two colors, two planes for four colors, three planes for eight, and so forth. HAM and Extra_Halfbrite mode images also create a bitplane drain, using a total of six, so consider your needs carefully before using these more high-powered color options. Also, if you use higher levels of resolution, you will eat up your chip RAM more quickly. The memory used to display one 16-color, 640 × 400 image is equivalent to that used for 16 lo-res, two-color pictures. Using overscanned images will also aggravate the memory problem and possibly slow or limit transitions and animations.

Pro Video Gold Hints

My favorite presentations program is Pro Video Gold (Shereff Systems, $299.95). A randomly accessible character generator, it allows you to create over 100 pages (screens) of hi-res, anti-aliased text with graphics and several hi-res IFF pictures for backgrounds. The 90-plus transitions are both the fastest and, without a doubt, the most varied. IFF images used for backgrounds will transition in the same manner as the text. If you use images only—no text—you can create a slick slide-show program with excellent transitions. You can run displays in sequence or select pages at random by page number. The demo disk from Shereff Systems shows the possibilities. □ *—OS*



The Director for pageflipping and manipulation of graphics, others discovered its ability to prepare interactive presentations of all sorts. The release of The Director Toolkit—sporting such new features as MIDI output, a text displayer, new wipe routines, and a chart generator—has enhanced the program's capabilities, and a videotape tutorial makes it easier to operate. Responding to user feedback, the developers are preparing The Director 2.0 with even more interactive features.

New offerings in the authoring field include **VIVA** (MichTron, $199.95), an authoring language that includes the ability to control CD-ROM and laserdisk devices. VIVA uses a Workbench interface to help you program your applications, and provides for storyboarding to assist in program design.

Another newcomer in interactive presentations, **UltraCard** (Intuitive Technologies, $49.95) by Mike Lehman, resembles HyperCard but uses the Amiga's superior multitasking and graphics capabilities to surpass the Macintosh-based system. You can program an application combining sound, graphics, and text from a database, and then direct the viewer to proceed further along any line of questioning. UltraCard is the glue with which to assemble what would otherwise be stray pieces of mixed media.

If you own an Amiga, you no longer have an excuse for slapping together boring presentations. Use your imagination, choose the right tools, and give your ideas the life and color they deserve. ■



Oran Sands is a video producer and engineer for Methodist Hospital of Indiana. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Buyer's Guide

Amiga Video and Animation Products

Compiled by *AmigaWorld* Staff

Before you get out your checkbook, do a little window shopping. Browse through our listing of animation and video software and hardware. Only products scheduled to be on the market by January 1990 are included. If a manufacturer had decided upon a release date but not a price, we marked it TBA (to be announced). For more information, contact the manufacturers. All addresses are listed starting on page 128.

Software

2-D PAINT PROGRAMS AND GRAPHICS PACKAGES

Amiga Graphics Starter Kit
Oxxi
$99.95

Complete set of painting, animations and drawing programs. The four-disk set—Aegis Images, Animator, Draw, and ArtPak—provides a comprehensive set of graphics tools and includes a selection of clip art, and a game.



Animator
Oxxi
$99.95

Polymorphic animation program that includes a paint system.

B-Paint
Finally Technologies
$39.95

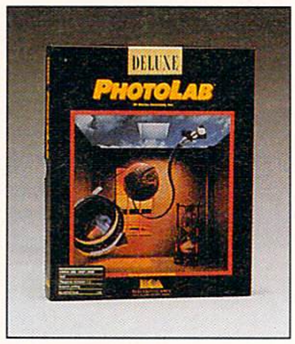
Lets you create IFF graphics in lo-, medium-, or hi-res. Full-screen palette also acts as a sound synthesizer.

ChromaPaint
Designing Minds
$44.95

Paint program with color cycling and animation capabilities. Supports Extra_Halfbrite mode, plus NTSC and PAL formats.

DeluxePaint III
Electronic Arts
$149

A professional graphics tool that paints animation. Create and paint with multiframe animated brushes. Supports Extra_Halfbrite, wrap, and tint modes, and overscan.



Deluxe PhotoLab
Electronic Arts
$149.95

A paint program that lets you create and manipulate images in eight resolutions. The package also includes a poster printing and image processing program.

Diamond
Impulse
$79.95

Paint program and image processor that supports all graphics modes, including HAM. The program gives you various region, blending, smoothing, brush, and batch tools. ►

PHOTOGRAPHED BY GEOFF O'CONNELL   ILLUSTRATED BY RAYMOND MEDICI

EXPERIENCE 3D POWER...

With the Sculpt-Animate series of 3D products!

Design...

Create three-dimensional worlds of haunting reality with Sculpt-Animate 4D, Sculpt-Animate 4D Jr., and Sculpt 3D*XL*! Our easy-to-use interface, the Tri-View, allows you to build 3D objects from scratch or with primitives (pre-drawn geometric shapes). Once you've built the object, use any of our powerful editing tools such as spin, grab, extrude, expand, contract, rotate, helix, and many more. Give color and texture to your creation, add light sources, and then proceed to...



"Kettle" created by Hrant Papazian with Sculpt-Animate 4D.

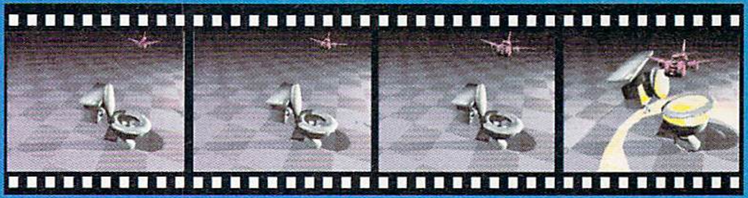


Render...

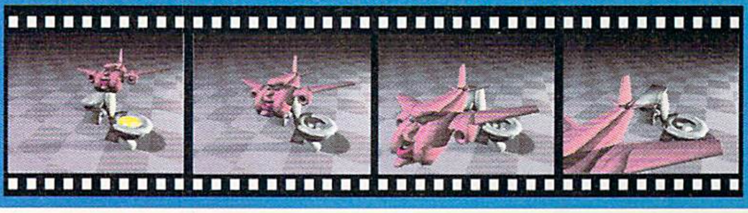
The photo-realistic scanline or ray tracing modes in Sculpt 3D*XL* and Sculpt-Animate 4D make your images come alive with light and color, even shadows and reflections! View 3D scenes from any perspective, and use variable lenses and exposure control for photographic special effects. Render IFF, HAM, overscan and 24-bit images, suitable for use on frame buffers or even in desktop publishing (requires additional software). For those of you on a low budget, Sculpt-Animate 4D Jr. produces stunning wireframe and polygonally shaded 3D images and animations. "Juggling Clerk" image created by Bruce Granofsky with Sculpt 3D*XL*, rendered in 24-bit mode.

Animate!

Add movement to your 3D world with Sculpt-Animate 4D and Sculpt-Animate 4D Jr.! Powerful animation features such as hierarchical motion control and motion blur let you duplicate real world movement with uncanny accuracy. You can preview your animation in real-time wireframe mode, and Sculpt-Animate supports RAM playback and single frame controllers, too. Only Sculpt-Animate makes designing, rendering, and animating your personal 3D world this easy!



Frames from "Mission", created by Bruce Granofsky with Sculpt-Animate 4D, rendered in HAM.



Suggested Retail Prices:

Sculpt-Animate 4D	$499.95
Sculpt-Animate 4D Jr.	$149.95
Sculpt 3D*XL*	$179.95

For U.S. and Canadian orders, call Centaur Software @ voice (213) 542-2226 or FAX (213) 542-9998.

Centaur Software, Inc.
P.O. Box 4400
Redondo Beach, CA 90278
(213) 542-2226

Sculpt-Animate 4D, Sculpt 3DXL, and Sculpt-Animate 4D Jr. are trademarks of Byte by Byte Corp.

Circle 445 on Reader Service card.

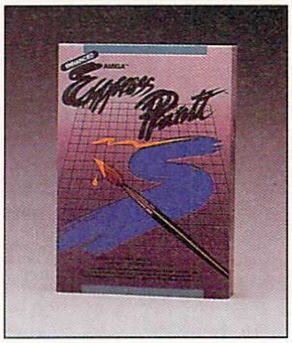
CENTAUR SOFTWARE

Digi-Paint 3
NewTek
$99.95

HAM paint package that features blending, tinting, and smooth shading modes, lasso cut and paste, special effects, and 4096-color dithered gradient fill and softening modes.

Direct Animation
Skyles Electric Works
$49.95

A cel animator that lets you place animations over backgrounds.



Express Paint 3.0
PAR Software
$139.95

Paint program that lets you transform any 2-D brush into a 3-D creation; create pictures of any size with any number of colors without running out of chip memory.

Fantavision
Broderbund
$59.95

Produces animations out of your single frame pictures. Provides tweening and transformation automatically. The program supports all display modes and comes with synchronized sound effects that work with IFF files.

Graphics Studio
Accolade
$49.95

The package supports virtual screens and a programmable color cycling tool for producing animations.

Images
Oxxi
$39.95

Paint program that offers pattern and brush editors, mirroring, airbrushing, smearing, wash and transparency, effects, color cycling, grids, zooming, gradient fills, dithering, and anti-aliasing.

LightBox
R & DL Productions
$189

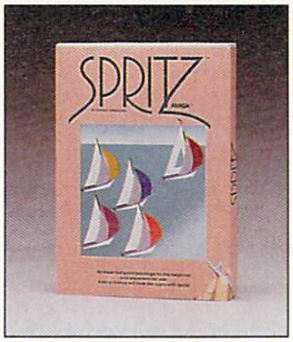
This drawing tool lets animators automatically pencil test their projects.

MovieSetter
Gold Disk
$99.95

Animation program that lets you create sequences with IFF graphics. Supports overscan and lets you sync sounds to your animations.

Photon Paint 2.0
MicroIllusions
$149.95

HAM paint program with special effects. The program features contour mapping, colorization, gradient color spread, and stencil.



Spritz
PAR Software
$79.95

Paint utility with multiple active brushes: features six-range color cycling, color changing for brushes, double arc curves and loops. ColorFont support, 64-color Extra_HalfBrite mode, and large canvas sizes.

3-D GRAPHICS PACKAGES

3-Demon
Mimetics
$99.95

3-D object modeler that lets you spin, flip stretch, slice, merge, divide, multiply, and build objects with the mouse in a single 3-D environment. Compatible with most 3-D programs.

ACAD Translator
Access Technologies
$179.95

Converts DXF files to Sculpt-Animate format. The program includes translation tools that provide control over block and layer selection, colors, textures, as well as circle and arc subdivisions.

Animate 3-D
Byte by Byte
$150

Animates ray-traced images. Control object rotation, camera movements, timing, and action through a graphical interface or script language. Link individual objects to orchestrate complex hierachial movements that simulate live action.

Animator:Apprentice
Hash Enterprises
$299.95

3-D rendering and animation program featuring surface mapping and object representation that lets you overlay pictures onto animations.

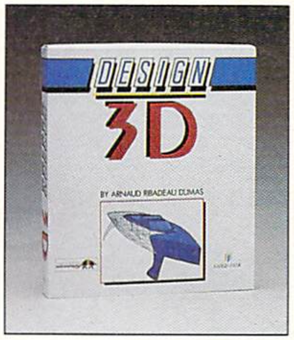
Caligari
Octree Software
$249.95

Consumer version: conceptual 3-D design and animation software.

Caligari Professional
Octree Software
$1995

3-D design and animation software. Features an intuitive real time interface that takes you through four phases in developing animation: designing or selecting objects, setting a scene, developing a choreography, and rendering the images to a video tape recorder. Supports single-frame controllers.





Design 3D
Gold Disk
$99.95

Model in wireframe with six line types. For solid modeling, the program offers 16 colors, four light sources, dithering, and flat shading.

Forms in Flight 2
Centaur Software
$119

A 2-D and 3-D drawing and animation program.

Modeler 3-D
Oxxi
$99.95

3-D object generation and modeling. Three adjustable windows display top, side, and front views.

Mondo Stereo
A-Squared
TBA

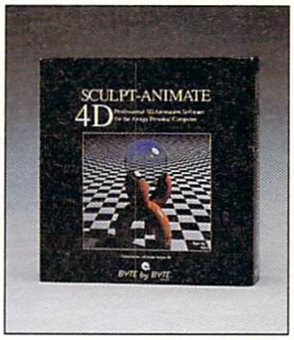
Stereoscopic 3-D image construction kit for use with X-Specs or red/blue 3-D glasses (included).

PageRender 3-D
Mindware
$159.95

3-D modeler with Anim generation, stereo vision, and ARexx support. The program comes with tools for building and restructuring your own objects and built-in special effects.

Sculpt 3-DXL
Byte by Byte
$99.95

3-D solid modeling and ray tracing. Create a 3-D picture with shadows, reflections, and smooth shading.



Sculpt-Animate 4D
Byte by Byte
$499.95

A professional integrated 3-D design, rendering, and animation package. Supports all graphic modes plus ray tracing, dithering, and anti-aliasing.

Sculpt-Animate 4D Jr.
Byte by Byte
$150

Consumer version of Sculpt-Animate 4D that automatically adjusts for perspective, illumination, and in-betweening.

Terrain
Impulse
$49.95

Fractal topography generator.

Turbo Silver 3.0
Impulse
$199

Ray tracing and rendering program that functions in all resolutions. Features include IFF and texture mapping, stencil creation, looping, true reflection and refraction, and color wire frame mode.

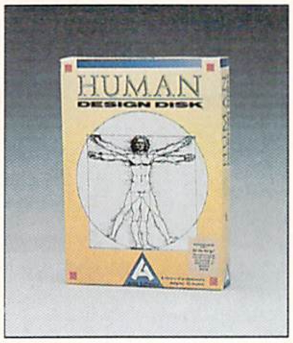
VideoScape 3-D
Oxxi
$199.95

3-D video animation that supports HAM.

CLIP ART, OBJECTS, AND BORDERS

3-D Design Disks
Antic
$29.95 each

Future Design's set of objects helps you build spacecraft, space stations, bases, ve- ►



hicles, robots, and androids. Human Design's human prototypes in skeletal form provides the tools to create a variety of forms. Microbot Design features robotic designs and components. Interiors and Architectural Design come with components for interior or exterior design.

Aircraft Pics
Tangent 270
$49.95

A variety of aircraft images in 16 colors and 16-level gray scale.

Art Companion Series
MicroSearch
$29.95 each

Data disks: For banners and borders, brushes & screens, holidays & sports, people & technology.

Art Gallery I & II
Unison World
$29.95

Clip art of different subjects.

Art Gallery—Fantasy
Unison World
$29.95

140 sword and sorcery graphics.

Artistic Expressions Volume I & II
PCM Industries
$49.95 each

Volume I themes include holidays, cowboys, business, and Olde English monograms. Volume II themes include home, music, flowers, stylized monograms. Both come with borders and graphics.

Art Parts Volumes I & II
Electronic Arts
$29.95

Clip art data disks of various themes for DeluxePaint.

Bird Pics
Tangent 270
$29.95

Contains ten screens of over 50 species of birds.

Borders
The Dragon Group
$34.95

Over 50 borders: Amiga Coloring Book.

Brummbar's Backgrounds
Software Sensations
$79.95

A collection of IFF-compatible backgrounds, brushes, objects, and palettes. Tips on using DeluxePaint III are also included.

Build 'Em
The Picture Box
$23.50

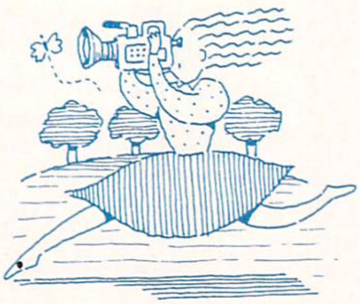
Includes all the necessary parts to help you construct human figures. Features a drawing system that lets you rotate, cut, and paste over 500 parts.

Charles Voner Clip Art
Charles Voner Designs
$24.95 each

MiniVol.1:Backdrops ($16.95)
MiniVol.2:Borders ($16.95)
VV2:The 3D-Animator
VV3:The 2D-Animator
VV4:The Videographer
VV5:The Broadcaster
VV6:The Educator
VV7:The Advertiser
VV8:The Videomaker

Clip Art Disks 1–8
Magnetic Images
$39.95 each

100+ hi-res images per disk covering different subjects.



Deluxe Maps Vol. I
Computer Arts
$25

US regional and state maps in IFF format.

Media Line Animation Backgrounds
Free Spirit
$39.95

A selection of 30 animation backgrounds on two disks. Both NTSC and PAL versions available.

Media Line Clip Art Collection
Free Spirit
$34.95

Selection of over 200 pictures with holiday, party, sports, computer, and scenery themes.

Movie Clips
Gold Disk
$34.95

Collection of animation sequences, for use with MovieSetter.

Oriental Desktop Art Volumes I–III
Software Integrations
$29.95 each

Data disks: Marshal arts, Oriental desktop art, and folk art.

Photon Paint Expansion
MicroIllusions
$29.95 each

A set of two disks containing variety of wood and marble surfaces for use with Photon Paint.

PIC-MAGIC
Joe's First
$85

Ten disks of over 250 images of plants, animals, borders, food, cars, sports, people, and more. Many are virtual screens of 1000 × 1000 pixels.

Sampler
The Dragon Group
$34.95

Assorted IFF clip art.

Seasons & Holidays
Electronic Arts
$29.95

Clip art with holiday themes for throughout the year.



Starships 2050
Polar Arts
$39.95
Library of 3-D space-age models of starships, moonbases, fighter craft, probes, satellites, and weapons machinery and includes digitized NASA photographs.

The Backgrounder
Philadelphia Video Lab
TBA

Backgrounds for HAM paint programs. Colors are adjusted for best appearance on videotape.

TV Graphics
Slide City
$49.95

Two disk set of interlaced, overscanned video backgrounds and borders.

VFX Animated Art
VisionFX
$49.95

Collection of animation brushes for use with DeluxePaint III.

VidGen
Microft
$149.95

Creates embossed backgrounds.

FONTS

AlohaFonts Series
AlohaFonts
Versions 1–3: $19.95

Fonts from 16 to 99 points; available with dingbats.

C Ltd. Fonts Sets
C Ltd.
$49.95

BoardWalk Font Set
Borders Font Set
Business Font Set
Celtic Font Set
Commercial Font Set ($99.95)
Headline Fonts
Jet Set Font Set
Olde English Fonts
Pyre Script Font Set
Simple Script Font Set
Symbols Font Set
Unity Roman Font Set

CalligraFonts:
InterActive Softworks

Asha's: $89.95
16-color and monocolor fonts
Andre's: $46.25
Newsletter fonts sized for dot-matrix presentations.
Lion's: $89.95
Four disks of 150 fonts for presentations.
Novelty: $69.95
Ice, Pencil, Skyline, Swiss Cheese, Jade, and Stars.

Calligrapher
InterActive Softworks
$129.95

Font editor with ColorFonts and Font-Mover lets you enhance or change size, color, pattern, shape, position, style, kerning, and spacing. The graphics editor comes with brushes.

Clip Art Volume IV
Software Integrations
$29.95

Chinese fonts.

Fancy 3-D Fonts
Access Technologies
$79.95

A two-disk set of three proportionally sized fonts: Bold, Ital, and Fanc. These emulate the font sets known as Helvetica bold, Bookman Italic, and Clarendon Medium. These are available in either Sculpt-Animate or Turbo Silver versions.

Font Enhancer
Innovision
$99.95

For Broadcast Titler, anti-aliases fonts.

Fonts & Borders
Unison World
$34.95

20 fonts of varied sized, 20 borders. ►

InterFont
Syndesis
$119.95

Create fonts for use with 3-D animation.
InterFont Add-On Module
$79.95
Font-creation add-on for Interchange.

Jet Master
C Ltd.
$79.95

Font editor that lets you lets you edit and interchange Amiga fonts. Allows use of fonts designed for use on laser printers.

Kara Fonts Sets
Kara Computer Graphics

Kara Fonts AnimFonts1
$49.95

Each character in an animation appears to be handwritten across the screen. Chrome, reflective gold, copper, bronze effects are included.

Kara Fonts AnimFonts2
$49.95

Features an eight-color font called Bullion, a dimensional, beveled, highlighted, uppercase gothic font that rotates 90 degrees with a glint of light traveling left to right across the character.

Kara Fonts Headlines
$99.95

Hi-res, textural, uppercase, ColorFonts. Styles include chrome, marble, brick, granite, wood, cast, column, chisel, bevel, and chisel serif.

Kara Fonts Headlines2
$99.95

Eight-color fonts in two and three sizes each. ChiselSCRIPT (flowing italic with linking letters), Glass (gothic, transparent, uppercase), and Engraved (shiny, two plane, gothic) are included.

Kara Fonts Subheads
$99.95

Includes scaled-down Headlines as Subheads in two smaller sizes: 72 and 55 points.

Lons Fonts
Micro Momenturm
$29.95

Interfont compatible font sets for use with 3-D rendering packages. Includes East, Euro, Radout, Stencil, Coup.

Masterpiece 3-D Font Set
Rock
TBA

Set of 3-D fonts, InterFont format.

Masterpiece Fonts
ARock
$199

Professional 20-disk set of fonts includes two disks of brushes. Includes 110 different font styles with most over 100 points high (can be resized), and 141 hi-res Dpaint II pages of objects and examples. In addition, has four disks of ColorFonts.

Media Line Font Disk 1 & 2
Free Spirit
$34.95 each

Disk 1 contains nine different bitmap fonts designed for professional use in video presentation, graphics, animation. Disk 2 is a collection of structured fonts for use with 3-D programs.

Professional Font Library
Classic Concepts
$74.95

Includes approximately 200 styles, 60 artist-designed fonts, from seven to 80 lines high, and Monochrome and specialty multi-color fonts.

ProVideo CGI Fonts
Shereff Systems
$99.95

Pacific, europa, and computer fonts.

ProVideo Fonts
Shereff Systems
$49.95

11 typefaces in three sizes each.

SuperFont Sampler 2
Classic Concept
$34.95

Two-disk set of small/medium fonts.

Tate Fonts Volumes I and II
Byte by Byte
$49.95 each

3-D fonts for use with Sculpt-Animate series. Slot, Tube, and Prism or Bevel, LCD, and Premier.

VFX Fonts
Vision FX
$49.95-$69.95

Three sets of fonts sold separately. Two sets of AnimFonts.

Video & Headline Fonts
Classic Concept
$44.95

Set of large monocolor fonts.

VV1:The Titler
Charles Voner Designs
$24.95

Two disk set of fonts, ColorFonts, scenery, and backdrops for video titling.

Zuma Fonts Volumes I-IV
Zuma Group
$34.95

A selection of fonts in three typefaces and sizes ranging from 12 to 100 points on each disk.

SPECIAL EFFECTS

ANIMagic
Sparta/Oxxi
$279

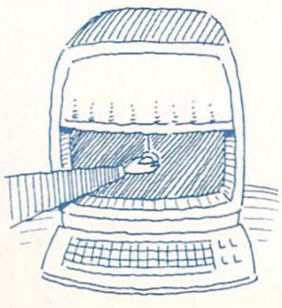
Animation editing and special effects generator. Works with most paint and animation programs.

Animation:Flipper
Hash Enterprises
$59.95

Lets you pencil test (preview) your animations for continuity. Flipper works with any resolution of IFF pictures including overscan, PAL, and HAM. Load a series of pictures together on a disk then the program will play them back as animated sequences.

CanDo
INOVAtronics
$149.95

Create multimedia presentations via icons and menus. You can combine



graphics, Anims, sounds and speech, text, menus, and on-screen hotspots.

Deluxe Productions
Electronic Arts
$199.95

Hi-res presentation creation program, includes more than 40 wipes and three art and font disks.

DeluxeVideo III
Electronic Arts
$129.95

Lets you create interactive presentations, animations, and video projects. You can sync sound effects and MIDI samples to your graphics. The program supports all Amiga resolution modes (even HAM), virtual screens, and MIDI output.

Director
Right Answers Group
$69.95

A script-based sequencing program that lets you combine IFF pictures, fades, dissolves, wipes, Anim files, page flipping, and operator interaction into one presentation.

Director Toolkit
Right Answers Group
$39.95

Enhancement for the Director.

Elan Performer
Elan Design
$59

Presentation program that snips up animations into single frames, combines single frames into animations, and converts among formats. You can step through your presentations forwards or backwards via the mouse or arrow keys or let the program sequence through automatically.

Interactor
Vivid Produce
$79

Interactive graphics presentation system.

Invision Plus
Elan Design
$299

Real-time video effects and animation that works with LIVE!, A-Squared's video digitizer.

Lights! Camera! Action!
Sparta/Oxxi
$79.95

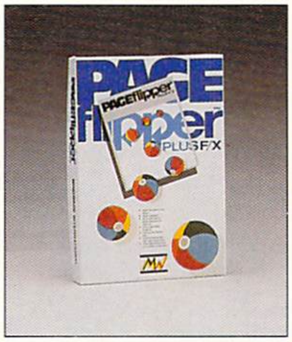
Slide-show and special effects generator. Combine files, graphics, sound, and music in one presentation.

Media Line Animation
Free Spirit
$39.95

Collection of structured fonts.

MindLight 7
Visual Aural Animation
$198

Generates real-time animated graphics from audio input. Includes an oscilloscope and a frequency counter. The program's MIDI player and recorder works with IFF files and is compatible with Dr. T's products.



PageFlipper
Mindware International
$29.95

Cel animation utility that scripts IFF images (including HAM and overscan) into a sequence.

PageFlipper Plus F/X
Mindware International
$159

Cel animation editor/compiler that supports all resolutions and a library of transitional effects.

PageSync
Mindware International
$99.95

Allows external MIDI devices to drive animations in PageFlipper Plux F/X and animations to drive MIDI devices.

Photon Video: Cel Animator
MicroIllusions
$149.95

This professional cel animation program lets you store drawings on disk so each frame can be called up repeatedly and manipulated within a sequence. A two-color preview, Pencil Test, lets you check on how your sequences are performing.

ShowMaker
Gold Disk
TBA

Combines animations, stills, live video, titling, music, and sound effects into long-playing productions. Features asynchronous loading for interruption-free productions.

Talking Animator
JMH Software
$49.95

Cel animator with overscan that incorporates speech.

TV*Show
Zuma Group
$99.95

Helps you produce animated presentations with your Amiga and video tape. Supports all IFF graphic formats including HAM, overscan, NTSC, and PAL.

UltraCard
Intuitive Technologies
$49.95

Via a combination of menu and script commands, the program lets you integrate sound, graphics, and text into interactive presentations. Create on-screen hotspots to branch to new information or programs, The UltraTalk language can automatically launch ARexx scripts.

Video Effects 3D
InnoVision Technology
$199.95

Create 3-D special effects for your 2-D IFF graphics. You control the graphic's path for tumbles, turns, spins, and zooms, as well as its speed. As a bonus, you can extrude 2-D text into solid 3-D form.

VIVA
MichTron
$199.95

Icon-driven multimedia program that lets you combine animation, sound, ►

graphics, video, and text in a single presentation. Can control laser disks and more.

Zoetrope
Antic
$139.95

A full-color animation system with the ability to create 2-D animations or to animate 3-D images. The program lets you create or import images to paste over frames and print a ghost image of previous changes to subsequent frames. A digital optical printer can make a logo or picture spin, twist, and glide across the screen.

TITLING

Animation:Titler
Hash Enterprises
$79.95

Professional video titler that scrolls color text and wipes. Includes a built-in text layout tool and operates in real time.

Broadcast Titler
InnoVison
$299.95

Anti-aliased character generator. Font enhancer available for $99.95.

Titler
Charles Voner Designs
$24.95

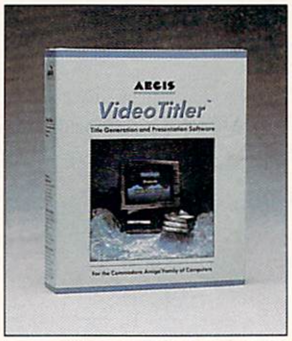
Art borders and backdrops for use with titling programs.

TV*TEXT
Zuma Group
$99.95

Character generator that lets you create lettering for presentations graphics or live video via a genlock. Supports overscan, IFF, NTSC, and PAL.

TV*TEXT PRO
Zuma Group
$169.95

Text creation package that works with its own fonts or Amiga fonts or ColorFonts. The program lets you modify and manipulate text strings and create custom backgrounds.



VideoTitler
Sparta/Oxxi
$149

Presentation graphics and titling for low-end video post production. Includes character and effects generation.

Video Visions:Titler
Charles Voner Designes
$79.95

Package of Volumes I-IV.

UTILITIES

3-D Options
Rainbows Edge
$89.95

Auto-traces bitmapped pictures and converts them to 3-D objects. Supports VideoScape 3D, PostScript, AutoCAD, and many more formats.

Animation:SoundTrack
Hash Enterprises
$119.95

A sound-animation synchronizing and editing progam. Features include digitize, copy, echo, cycle, volume, cut and paste, and mixing. The program lets you synchronize your soundtrack to an animation in progress.

Animation:Stand
Hash Enterprises
$69.95

Emulates an animation camera stand and pans, zooms, or distorts accordingly. The program works in IFF resolutions including overscan, PAL, and HAM.

Animation Station
Progressive Peripherals
$99.95

Anim editor with storyboard interface that allows cutting and pasting of cels. You can over- or underlay IFF images into an animation, combine a sequence of IFF pictures into an animation, link or overlay multiple animations, add special effects such as mosaic tiling, and define motion paths for IFF brushes in the foreground or background.

Butcher
Eagle Tree
$37

An image processing program that lets you convert all resolutions and modes. Includes some special effects.

DataPlot
Bytes and Bullets
$15

Plots curves of data generated by other programs.

Demonstrator
Meridian Software
$39.95

Record key strokes, mouse movements, etc. for future playback. Allows you to add speech and text windows and control presentation speed.

DigiWorks 3-D
Access Technologies
$129.95

Converts digitized images and clip art into 2-D and 3-D objects for rendering and animating. Auto-traces bitmapped pictures.

DPaint Art & Utility
Electronic Arts
$29.95

Includes slideshow program.

Eye Play 2
Silver Software
$19.95

Build computer art; 36-graphic routines.

Focus Video
A-Squared
$159

Image acquisition and processing software. Features color control, filters, convolutions, contrast enchancement, and histograms.

Forms In Flight Conversion Module
Syndesis
$19.95

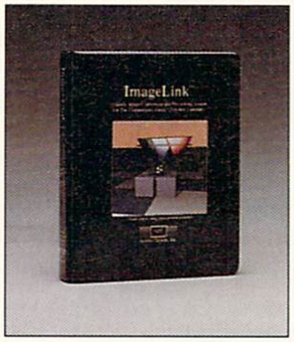
Add-on module for InterFont and InterChange. Converts to and from the Forms In Flight 1.0 format.

Grabbit
Discovery Software
$29.95

Print and save screens.

Graphics Transformer
IMSI
$89

Converts graphics file formats.



ImageLink
Active Circuits
$299.95

A full-color imaging and graphic-conversion system. Supports IFF, Sculpt-Animate, PICT, PICT2, Targa, and Turbo Silver formats. Additional modules for GIF, Sun Rasterfile, and TIFF formats are also available.

Impact
Oxxi
$39.95

Business presentation graphics management. Create charts that can be manipulated, printed or saved as slides, or combined with tables, icons, or structured objects.

InterChange
Syndesis
$49.95

Modular system for sharing objects between 3-D modeling programs. Includes modules for Sculpt 3D and VideoScape 3D formats.

InterFont
Syndesis
$119.95

Automatically create text objects for 3-D modeling and desktop publishing programs. InterFont includes InterChange and modules for Sculpt 3D, VideoScape 3D, Aegis Draw Plus, and Pro Draw.

K-Graph3
Kuma Software/MichTron
$99.95

Graphic displays for presentations. Auto-axis scaling, statistics, math, and logical expressions.

MediaBase
Interactive Microsystems
$149

Interactive A/V presentations from video, etc.

MediaProcessor
Interactive Microsystems
$149

Video production program, controls genlocks.

PhotoSynthesis
Escape Sequence
$149.95

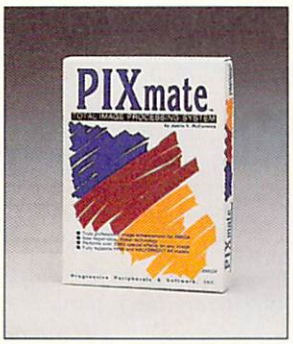
Image processing software.

Photon Video: EDLP
MicroIllusions
$499.95

(Edit Decision List Processor) Lets you create your edit decision lists off-line to reduce on-line costs.

Photon Video: Transport Controller
MicroIllusions
$299.95

Allows frame-by-frame and continuous segment recording of animation sequences and video time lapse sequencing.



PIXmate
Progressive Peripherals
$49.95

Image processor, converts any resolution and mode, color and pixel manipulation.

Programmer's ToolKit
Interactive MicroSystems
$149

Gives you the capability to control infrared devices.

RTV
Pangolin Laser Software
$495

Raster-to-vector conversion program that lets you transform IFF images into projected laser graphics via a standard laser scanner projector.

Turbo Silver Module Pack
Syndesis
$119.95

Add-on modules for InterChange and InterFont, including modules for both Turbo Silver 2.0 and 3.0 formats, Scale, GridSnap, PointReduce Tool, and Statistics Converter.

Video Visions: The Program
Charles Voner Designs
$34.95

Animation and still graphic editing and display program.

Video Wizard
Intracorp
$29.95

Identifies blank spaces on video tapes.

VIDI-Mice
Tensor Productions
$85

Transforms real-time video into mouse and button events. For use with LIVE! from A-Squared.

WindowPrint II
T & L Products
$34.95

Screen capture and dump save and print.

Hardware

COLOR SPLITTERS/FILTERS

Auto Droid
MicroSearch
$59.95

Servo motor that attaches to Digi-View color wheel. Uses the second mouse port ►

and Digi-View software to automatically turn the filter for color digitizing.

Color Splitter
SunRize Industries
$99.95

Replaces color wheel for digitizers.

Digi-Droid
NewTek
$79.95

Automatic motor-driven filter wheel for Digi-View Gold.

DRAWING PALETTES

Amiga Light Pen & Driver
Inkwell Systems
$129.95

High-resolution light pen and software designed for painting, drawing, and CAD work. Features include single-pixel precision, variable sensitivity, Zoom mode, and button toggle. Includes a pen hook.

AProDraw
R & DL Productions
9 × 6 inches: $499
12 × 12 inches: $599
18 × 18 inches: $999

Includes drawing tablet, power supply, software, and a four-button cursor. You supply the serial cable.

EasyL
Anakin Research
$499

Pressure sensitive drawing pad for use with with DeluxePaint III, Aegis Images, or EasyL's own IFF software. All resolution levels are supported.

IS Penmouse
Kurta
$395

Cordless drawing pad with remote stylus and controlling software.

GENLOCKS AND ENCODERS

4003RCU
Amicore International
$499

Remote control for Magni Genlock.

4004 Genlockable Video Graphics Encoder
Magni Systems Inc.
$1695 ($1995 with Remote Control)

Genlock system for the A2000 that provides video/graphics fades with adjustable rates, luminance keying, and color zero keying.

4004S Genlockable Video Graphics Encoder
Magni Systems Inc.
$1695.00 ($1995 with Remote Control)

Genlock system for the A2000 supports Y/C output.

A1300 Genlock
Commodore
$299.95

A1000-only genlock system that synchronizes Amiga graphics with video signal.

A2300 Genlock
Commodore
$399

A2000 genlock overlays Amiga graphics on both NTSC and PAL video.

AmiGEN
Mimetics
$199.95

NTSC genlock for all Amiga models. Overlays any Amiga image over any video image generated by external video source.

ENC-1
Communications Specialties
$395
Converts RGB signals to composite NTSC video. Color burst is locked to sync.

GEN/ONE
Communications Specialties Inc.
$895

A genlocking encoder featuring S-VHS Y/C and RS-170A outputs, control over RGB input and video output levels, and variable control over the computer timing relative to the video. Two comb filters are used to filter unwanted chroma signals without degrading the luminace bandwidth.

Image Master Pro-Genlock
Neriki
$2195

Encodes and syncs RGB output to composite video signal. Supports S-VHS, MII, and Betacam formats, among others.



MiniGEN
Progressive Peripherals and Software
$229.95

Broadcast-quality genlock with a three-position toggle switch for graphics, video, and a mixed display.

Omni-Gen 701 Amiga Computer Genlock System
Omicron Video
$1595

NTSC genlock for all Amigas. Produces composite or Y/C 358 video signals. Fade-to-black controls are included on a remote control panel. PAL version available.

Omni-GEN 711
Omicron Video
$2495

S-VHS/NTSC genlock system that provides separate Y/C circuitry. A500, A1000, A2000, and A2500 compatible. PAL version available.

ProGEN
Progressive Peripherals and Software
$449.95

Genlock with software that offers five display modes.

Scanlock VSL-1
VidTech International
$995

Genlocks from VHS, S-VHS, MII, or Betacam formats. Compatible with all Amigas. PAL version also available.

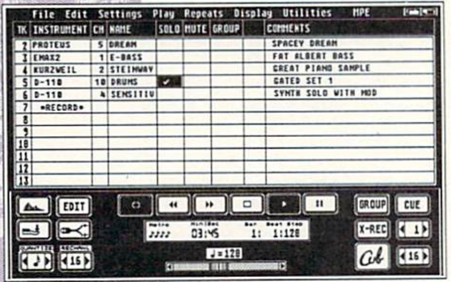
SuperGen
Digital Creations
$799

Genlock with RGB loop through, faders ►

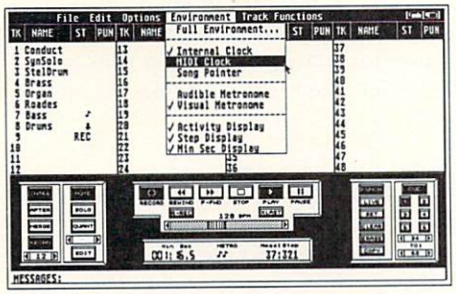
"A level of excellence used to determine quality."

Standards

As an Amiga owner you've invested in a machine that has set the highest standards of excellence for all facets of creative computer applications. You have patiently waited for music software that lives up to those standards. Now, at last that level of achievement has been reached.

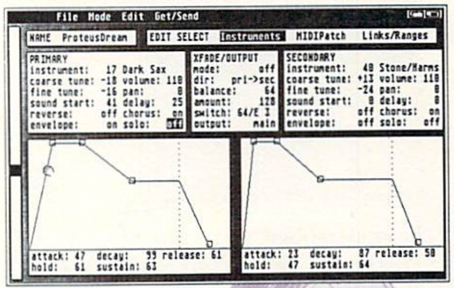


Dr.T's growing catalog of over 23 Amiga titles for both professionals and amateurs include: TIGER Cub and T.I.G.E.R. interactive sequencing and graphic editing programs; the Level II and KCS sequencers; Copyist Apprentice and Professional scoring and transcription programs; Caged Artist editor/librarians; the Model-A MIDI interface; and others. They give you all you've waited for...and more!





Features such as the exclusive Velocity Stems in TIGER and TIGER Cub, the Level II "Algorithmic Editing", the incomparable music printing of Copyist, or the acclaimed Mouse-Play function in the Caged Artist editors all make Dr.T's the products of choice of serious Amiga musicians. And if you take the accuracy of your sequencer seriously, how about rock-steady timing at a resolution of 240 Pulses Per Quarter Note! We've solved problems other companies are still struggling with.



Whether you play music for fun, or music is your life, we have the music software tools that will help you make music faster and easier than you ever dreamed. Try us and see why thousands of Amiga users chose Dr.T's for their software. Call or write for our free catalog, or send $5 for a Demo disk.

Dr. T's
MUSIC SOFTWARE

Products:

SEQUENCERS
LEVEL II
KCS V1.7
TIGER Cub
MRS V1.1

EDITOR/LIBRARIANS
CASIO VZ-1 VZ-RIDER
CZ RIDER
DX HEAVEN
EMU Proteus
ESQ'apade ESQ-1 SQ-80
4-OP DELUXE (Yahama)
KAWAI K-1
KAWAI K-5
KORG M-1
LEXICON PCM-70
OBERHEIM MATRIX 6/1000
ROLAND D-110
ROLAND D-50
ROLAND MT-32
X-OR (UNIVERSAL EDITOR)

COMPOSITION/ SCORING
COPYIST APPRENTICE
COPYIST PROFESSIONAL
TIGER (GRAPHIC EDITOR)

MISCELLANEOUS
MODEL-A MIDI INTERFACE

Music Software of the Year, 1988
Commodore Magazine

"Our hands-down favorite new piece of software, TIGER...is a music composition program whose elegance is simply stunning. Finally, a program that bridges the gap between cold, hard technology and the creative musician."
Keyboard Magazine

"The most powerful and dependable of MIDI sequencers for the Amiga is KCS..."
Amiga World

"(Copyist is) A composer's delight that provides score editing, file conversion capability, and custom printing all in one package."
Amiga World

"(MRS)...compared to other sequencers, it is a great value."
Amigo Times

"...(Level II) is a powerful collection of MIDI recording and editing tools that works well, is responsive, and is designed with the high-end user in mind."
Amiga SENTRY

220 Boylston Street
Suite 206
Chestnut Hill, MA 02167
U.S.A.

(617) 244-6954
FAX (617) 244-5243

for computer and video, two video overlay outputs, a key output, notch filter, and more.

SuperGen 2000S
Digital Creations
$1595

S-VHS-compatible genlock and overlay system for the A2000/A2500. Allows upgrade paths to a frame buffer with time-base correction and color digitizing through Living Color expansion products.

VI-2000
VI-500
Creative MicroSystems Inc.
$79.95 each

Provides composite, chroma, and luma outputs. Also available with RF Modulator ($99.95).

MONITOR ADAPTORS

A-Video
Akron Systems
$49.95

Use Amiga with color composite monitor.

C-View Series
C-Ltd
$39.95 each

The four available adaptors let you connect your Amiga to an NTSC or PAL composite monitor or an NTSC or PAL color composite monitor via the chroma and luma inputs.

flickerFixer
MicroWay
$595

Card and video port for the A2000/A2500 that completely eliminates interlace flicker and visible scan lines. Works with multi-scanning monitors.

flickerFixer Genlock Compatibility Option
MicroWay
$50

Piggyback module that allows the flickerFixer to be used in conjunction with external NTSC genlocks.

S-View:The Connection
Software Sensations
$79.95

S-Video cable for recording on S-VHS and ED-BETA. Eliminates cross-color.

TOUCH SCREENS

Future Touch
Amigo Business Computers
$795

Touch-screen system for 13-inch analog RGB monitors that accepts finger- or stylus-presses on the screen in place of mouse clicks. Includes software, controller, power supply, and cabling.

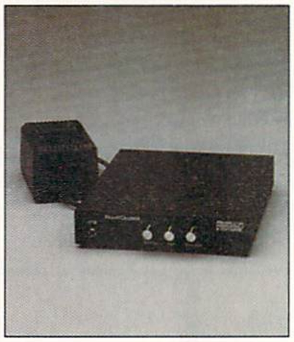
VIDEO DIGITIZERS AND FRAME BUFFERS

Digi-View Gold
NewTek
$199.95

HAM and IFF color digitizer. Available with Digi-View 4.0 software that supports ARexx, 24-bit IFF color, and 68020 and 68030 accelerators.

Frame Buffer
Mimetics
$549.95

Frame buffer for all Amiga models. Can only display images; to capture video you must use it in combination with AmiGen.

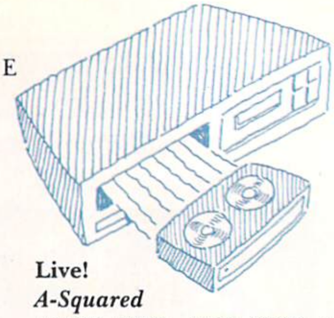


FrameGrabber
Progressive Peripherals and Software
$669.95

Real-time (1/60 second) video digitizer for all Amiga models.

FrameGrabber 256
Progressive Peripherals and Software
$724.95

Real-time 8-bit video digitizer. Captures interlaced 256-shade monchrome images in 1/30th of a second.



Live!
A-Squared
A1000: $295, A500: $399, A2000: $450

Real-time video digitizer with HAM support. A500 model includes a power supply. A2000 card offers additional video effects, such as tiling and mirroring.

Perfect Vision
SunRize Industries
$219

Grabs black-and-white video frames in real time. Can capture color images with a color splitter.

VD-1
Impulse
$1000

Real-time video freeze frame with 24-bit frame buffer. Captures any NTSC video signal from color or black-and-white camera, videotape, video disc, or broadcast tuner.

Video Digitizer
Datel Computers
$139.95

Captures video images in a 16-level gray scale in 1/60th of a second. Also includes controls to edit the resulting IFF graphics.

VIDEO EFFECTS BOXES

Video Toaster
NewTek
$1595

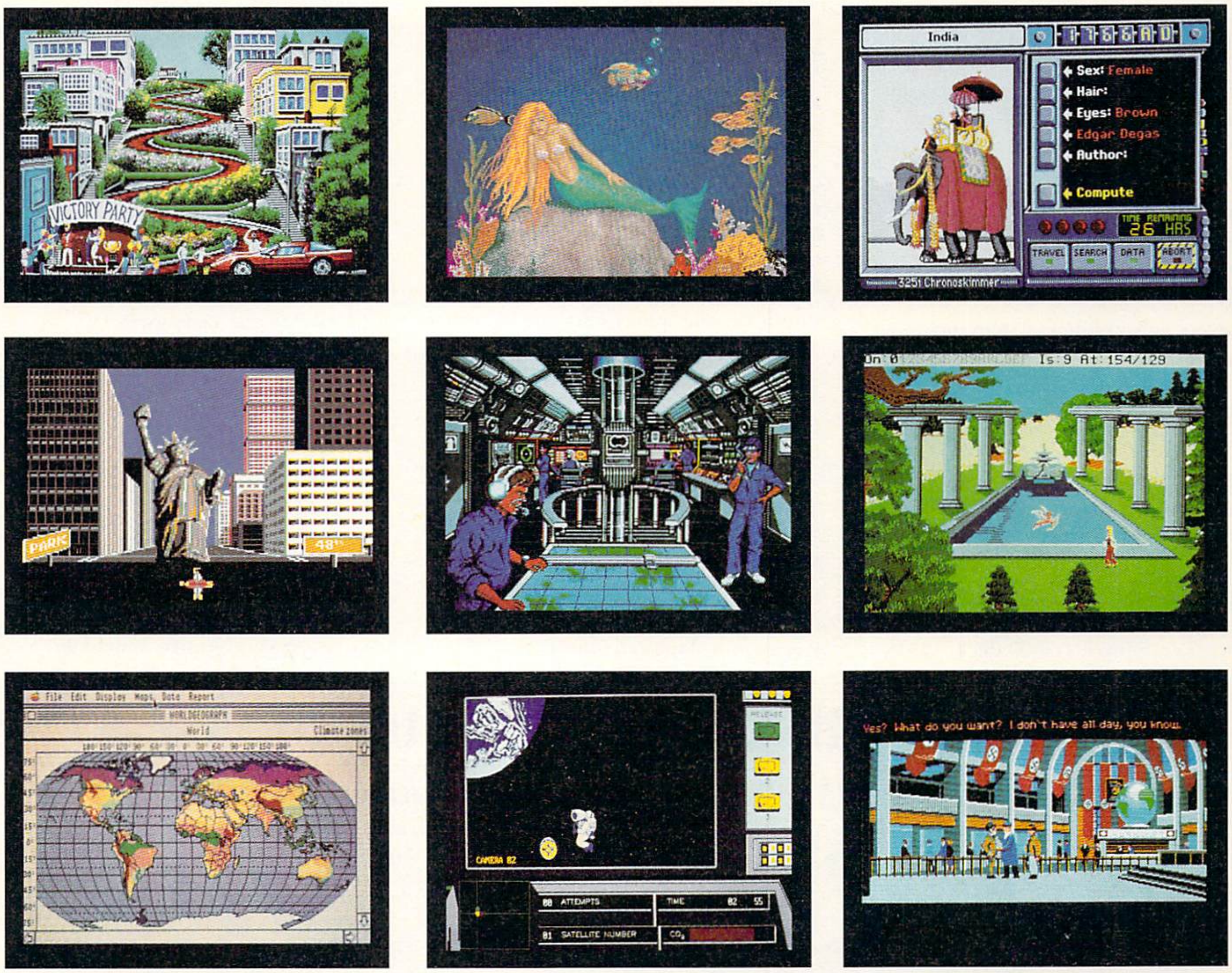
A video computer with four VLSI custom chips. Includes frame grabber, frame buffer, title generator, fast frame store for storing up to 2000 frames, and the ability to create real time geometric effects.

VIDEO WORKSTATIONS

AmiLink
RGB Computer & Video
TBA

Video editing workstation that controls up to 32 video devices. ►

See The World



And Never Leave Home

Discover a world beyond word processing and spread sheets. Let your computer take you to new lands. Take flight! Spread your wings and travel to exotic places. Let your computer thrill you with new experiences.

FREE BROCHURE!
1-800-333-3944

Software Publishers Association
1101 Connecticut Ave. NW, Suite 901
Washington, DC 20036

To learn more about home software, call for our free colorful brochure, "The Other Side of Computing". It describes the variety of software you can use on your computer. Let your computer entertain and educate you!

CONSUMER
SOFTWARE
SECTION

Circle 434 on Reader Service card.

MediaPhile Broadcast ED-BETA System
Interactive MicroSystems
$14,999

Complete broadcast system including an A2500, Sony EDC-55 camcorder, Sony EDV-9500 deck, 1084S monitor, Digital Creations' 2000S Genlock, Sony RM151KA remote control, and software including DeluxePaint III.

MediaPhile Consumer VHS Video Production System
Interactive MicroSystems
$2499

Complete video-editing system including an A500, Sony SLV-50 deck, 1084S monitor, Digital Creations' SuperGen, MediaPhile 1.3 MP Infared controller, and software.

MediaPhile Hi-8 Personal Video Production System
Interactive MicroSystems
$6199

Video-creation and editing system including an A500, Sony CCD V99 8mm Camcorder, Sony EV-S900 deck, 1084S monitor, VidTech's Scanlock Genlock MediaPhile 1.3 MP Infared controller, and software.

MP_1.3MA
Interactive MicroSystems
$99

Interface that provides one Sony S-port output and the MediaPhile utility software disk.

MP_1.3MP Infared Controller
Interactive MicroSystems
$195

Controller that plugs into game and parallel ports to provide S-VHS, VHS, Beta, or ED-BETA video-deck counter input. Also provides two Sony S-port outputs. Includes a Sony RMT-E1S infared remote control and software.

TCRG-102
MicroIllusions
$799.95

Reads and generates time-code (a standard system for numbering video frames) for syncing videotape and sound.

The Directory Economy
Amigo Business Computers
$4607

A500 with 20MB hard disk, MichTron's VIVA, and Future Touch.

The Directory Laser Disk System
Amigo Business Computers
$8483

A2000HD with A2300 Genlock, Pioneer Model 4200 Laser Disk, MichTron's VIVA, and Future Touch.

The Directory without Laser Disk
Amigo Business Computers
$6562

A2000HD with MichTron's VIVA, and Future Touch.

The Exhibitor
Amigo Business Computers
$12,442

A2000HD with Neriki Genlock, Pioneer Model 4200 Laser Disk, MichTron's VIVA, MicroWay's flickerFixer, FTHA3905 Multi-Sync monitor equipped with Future Touch. ■

CHOOSE THE RIGHT PATH! INVEST IN THE SUPERBASE SYSTEM

Superbase™ PERSONAL

AS EASY TO USE AS A VCR

- Fully multi-file relational power
- VCR style control panel gives easy access to data
- 3 ways of viewing data to cover entry, review and comparison
- Set up and change file definitions quickly using point and click controls
- Define and print multi-file reports with Superbase Query function
- Include images, sound and text as external files within your database record

■ Superbase Personal: Multi-file relational power at a flat-file price

NEW LOW PRICE

$79.95

UPGRADE PATH

Superbase™ PERSONAL 2

POWERFUL FILE MANAGEMENT WITH BUILT-IN TEXT PROCESSING

All the features of Superbase Personal PLUS

- Text Editor for creation of letters and documents; editing options include cut and paste
- Improved data handling facilities including batch entry of data and cross-file lookup
- Keyboard controls for easy editing
- Time field type and additional validation options
- Mail-merge facility for producing personalized letters
- Built-in telecommunications for swift data transfer

■ Superbase Personal 2: Full-featured file management at your fingertips

". . . offers more power and sophistication than do most non-programmable databases. . .

"Personal 2's LOOKUP command. . . gives the program a decided advantage over most of its competitors."
AmigaWorld July '89

$149.95

UPGRADE PATH

Superbase™ PROFESSIONAL

THE MOST POWERFUL DATABASE FOR THE AMIGA COMPUTER

- Database management language (DML), Superbase's own 4GL programming language. Over 250 high-level commands, and other powerful features such as arrays, looping constructs and branching
- Create sophisticated custom programs and applications
- Report generator for ease of set-up and output of reports
- Intelligent Forms Editor enables you to generate multi-file applications without the need for programming
- Automatic transaction processing lets you reproduce standard business forms.
- Extensive programmable telecommunications facilities

■ Superbase Professional: World Class programmable database that's easy to learn and use!

Version 3

$349.95

SUPERBASE PROFESSIONAL AND SUPERPLAN NOW SUPPORT ARexx

Superplan™

SPREADSHEET • BUSINESS GRAPHICS • TIME MANAGEMENT

- Full featured spreadsheet environment that tracks time, resources and money to give a complete picture of your project plans
- Print wall planning charts, Gantt charts; do critical path analysis
- Graphics facility to visually portray your data in over 100 different graph styles and options
- Sideways printing, full color output to extensive range of printers and plotters
- Fully programmable, Lotus 1-2-3 and dBase file compatible
- Works stand alone or with Superbase to provide superb productivity environment

■ Superplan: The Fourth Dimension

"The program's abilities are limited only by your imagination and ingenuity, and you will likely never outgrow Superplan's capacity."
AmigaWorld August '89

$149.95

Precision Incorporated
London • Dallas • Munich

Precision Incorporated
8404 Sterling Street, Suite A
Irving, TX 75063
Tel: (214) 929-4888. Fax: (214) 929 1655

Available from your dealer
or call Precision
Tel: (214) 929-4888

Circle 423 on Reader Service card.

Precision Incorporated acknowledges all trade marks


VCR

BUYING SMART

Cutting the Red Tape

Super VHS, ED-BETA, VHS-HQ, or Hi-8? Panasonic, JVC, or Sony? We'll help you sort out the videotape formats and select the right VCR for your Amiga video system.

By Geoffrey Williams

YOU CAN CREATE an Oscar-caliber animation or genlock together the next Roger Rabbit, but your Amiga productions will be only as good as the VCR they are recorded on. Fortunately, new consumer models now offer improved recording formats and professional features that were once found only in expensive studios. While powerful, the range of possibilities can be daunting to the uninitiated shopper. The first step is to decipher the choices—VHS, Beta, VHS HQ, S-VHS, ED-BETA, or Hi-8.

Fear of Formats

The format wars began with Beta versus VHS. While Beta offered superior picture quality, a combination of better marketing and longer playing time gave VHS the edge. The next round pitted Super Beta against VHS HQ. Super Beta increased resolution by about 20 percent, but lost again: VHS HQ is the current standard, outselling all other formats by a considerable margin. (HQ simply means that the VCR has picture enhancement circuitry, although the quality and type of this circuitry can vary. An HQ picture is not actually higher in resolution, it just appears to be because of noise reduction and edge sharpening.)

Going one step further, the newest slew of competitors—ED-BETA, Super VHS, and Hi-8 VCRs—offer twice as many scan lines (or more), which significantly improves the picture resolution and more accurately records high-resolution Amiga graphics. To cut down on dot crawl and other NTSC problems (see the sidebar "Making the Most of NTSC"), the machines separate the chroma and luma signals and send them to monitors and other VCRs via Y/C (or S) connectors. The other advantage to these three is that you can edit onto another tape, as they have greatly reduced generational loss. Because all three are advancements on an earlier format, they can play and record in their previous format. The older machines cannot, however, play the advanced format tapes.

For overall quality, ED-BETA is the winner. It can record more than 500 horizontal lines of resolution, which is very close to the Amiga's theoretical maximum of 540 lines. Its tape stabilizers not only reduce jitter and color smear considerably, but also provide more glitch-free audio on the linear tracks—making it the best choice for recording sound as well.

If you like small and lightweight, the new Hi-8 cassettes are much more compact than Beta or VHS. You can record more than 420 lines of resolution, and the new metal videotape offers high picture quality and much less picture noise. With sales of camcorders booming, Hi-8's small tape size could make it a very popular format with consumers.

Super VHS (S-VHS) offers about the same resolution as Hi-8 (although the Hi-8 picture quality might be a little better). One of its major drawbacks, however, ►

ILLUSTRATED BY SANDRA FILIPPUCCI

is poor linear audio fidelity. There can also be a problem with chroma shift on copied tapes, although some machines have a luminance-delay circuit that corrects this. Of the three, S-VHS is quickly becoming the machine of choice for industrial non-broadcast applications, partly because you can make a VHS final copy on an S-VHS machine so that the majority of VCR owners will be able to view your tape.

Choosing the right format depends on what you want to do with your video recorder. If you just want to record first-generation Amiga graphics for your personal use, a good-quality VHS HQ recorder will be fine. If higher-quality or editing to another tape is important, you would be better off with ED-BETA, S-VHS, or Hi-8. Hi-8 may be preferred if you want a lightweight camcorder, ED-BETA is the choice for the best quality multiple-generation copying, and Super-VHS is the way to go if you want compatibility with most consumer recorders or want to add industrial-level equipment.

The Unadorned Deck

Your recorder should have at least four recording heads; fewer than that will not stand a chance of cleanly recording Amiga graphics. Flying Erase heads, which until a short time ago were found only on very expensive equipment, are also a must. These recording heads will back up to the end of the previous signal and start recording at that point, thus erasing any noise that might have been recorded as you hit the stop or pause buttons. Without this feature, every time you stop and restart recording (make an edit), you will get noise or picture disturbance.

If you want to do editing, you might also look for Control-L and Control-S connectors, which allow you to control the machine via an edit controller or VCR with external edit control capabilities. You can also sync the deck to a second VCR with synchronized edit capabilities for very accurate editing. You may not use this now, but I guarantee that it will be helpful as you acquire more equipment. Another handy editing feature is a real-time counter (as opposed to an arbitrary number counter) to keep track of hours/minutes/seconds.

The Decked-Out Deck

While a little more expensive, VCRs with digital special effects open up many interesting possibilities for enchancing Amiga graphics. Most offer digital noise reduction, which can give you a much cleaner picture. They can hold a still frame of video in memory and manipulate it, eliminating the need for a digitizer. Many time-lapse and slow-motion effects are also available. Digital effects vary widely from machine to machine, but here are some must haves:

PIP (Picture in Picture) holds a still image in memory, shrinks it, and overlays it on the incoming live video. This can also be reversed, with a tiny live picture on top of the larger frozen image. More sophisticated machines can overlay images from two live sources. With PIP, you can reduce an Amiga graphic and display it over the shoulder of an announcer, just like on the network news.

Nine Picture Strobe shows a matrix of nine tiny images on the screen. Its most common application is to show stills by scanning available channels, but it could be useful for montage effects.

Digital Dissolve fades from a previously captured image into the incoming live video. Producing this type of effect on the Amiga is not easy, and in traditional video it requires two sources and a switcher to control the dissolve. It is a much more effective way to change between screens than fading to black and then fading up on the next image.

Split Screen divides the screen in half with one side live video, one the captured image.

Several other features come in handy for specialized applications. Sound-on-sound overdubbing lets you record additional sounds without losing existing audio, while PCM digital audio gives overall high-quality sound. Insert editing provides the ability to



High-powered productions benefit from high-powered equipment. From left: a Time-Base Controller, an Edit Controller, and a Single-Frame Animation Controller.

More Equipment, Better Quality

AS YOUR VIDEO studio prospers, you should investigate some additional devices that will increase the quality and professionalism of your videos. The cost of this equipment is coming down as consumers are pushing for higher-quality video.

TIME BASE CORRECTOR (TBC)

The signal from prerecorded video is inherently unstable. To stabilize the video signal when you are editing or making video dubs, connect a TBC between the two VCRs. The time-base errors will worsen in succeeding generations, so TBCs are very helpful for multigeneration editing. S-VHS' third-generational quality improves greatly if you edit with a TBC connected. TBCs are also necessary if you create video effects from a prerecorded tape with devices such as the Video Toaster, which require more stable signals (although they work fine with the much more stable live signals from video cameras).

The bad news is that TBCs are expensive. Expect to spend $1200 to $6000. S-VHS TBCs currently start at about $3000. The good news is that Panasonic has released the first consumer video recorder with a built-in TBC. The PV-S4990 S-VHS retails for $1599 and includes a jog/shuttle dial, among other features.

EDIT CONTROLLERS

If you purchased a VCR with Control-L or Control-S ports, you can use a compatible edit controller to drive it. Costing as little as $300, they make editing much easier as both machines are controlled from one device. An edit controller is a necessity when doing A/B Roll editing (editing from two source VCRs onto one master tape). Some newer VCRs have built-in edit-controller features. JVC's HR-S10000U S-VHS editing machine ($3000) comes with an eight-scene editing controller, plus such niceties as preview editing and automatic preroll. For those short on cash, use your Amiga as an edit controller (see "Setting Up Shop," p. 16) with the proper cabling and software.

SINGLE-FRAME

Animations composed of complex hi-res, overscan images that require large updates from RAM tend to be jerky when played directly to videotape. To get the smoothest movement, you need to record the animation one cel at a time. This is still an expensive option, requiring a single-frame controller, software to drive it, and a compatible VCR. The controller alone will cost at least $2000. A first in the consumer market, JVC's forthcoming GR-S707 S-VHS-C Camcorder should support single-frame recording.

FILM RECORDERS

For the highest quality, film recorders are the standard for producing broadcast-level computer images on videotape. Film recorders, such as the Polarioid Motion Picture Recorder (about $6000), transfer your computer images frame by frame onto motion picture film. As with single-frame recording, the length of the animation is not limited by computer memory. With film as the medium between computer and videotape, you can capture everything on your RGB monitor, even images with high contrast, extreme color saturation, and non-interlaced resolutions, to get the full richness of the signal. You transfer the film to videotape using a high-density CCD (charged coupling device) with a minimum of image degradation. Several film production houses now offer this service by mail. Using a film recorder will give you much better quality than even an expensive RGB encoder because the camera is creating a new signal, not trying to convert an exsisting one.

If you have an entrepreneurial spirit, you could buy a BOLEX 16mm motion picture camera and an animation motor (about $1600 for the set), and do your own film recording off the monitor. You can zoom in and out or crop borders to customize the production. After the initial investment, costs are low: $15 to have the film developed and $20 or so to get the images transferred to videotape. □

—Geoffrey Williams and Joseph and Paul Conti

insert new video into previously recorded video without a noticeable glitch at the end. A jog (or shuttle) wheel makes it easier to find the exact point you want to edit from, while synchronized editing lets you control other VCRs.

You do not need character-generator or video-titling features. While they eliminate the need for a genlock if you want to overlay text on live video, their quality is too low for most applications. If you really want text over video, get a genlock and use one of the many video-titling packages available for the Amiga. (For more information see "Say It With Style," p. 62.)

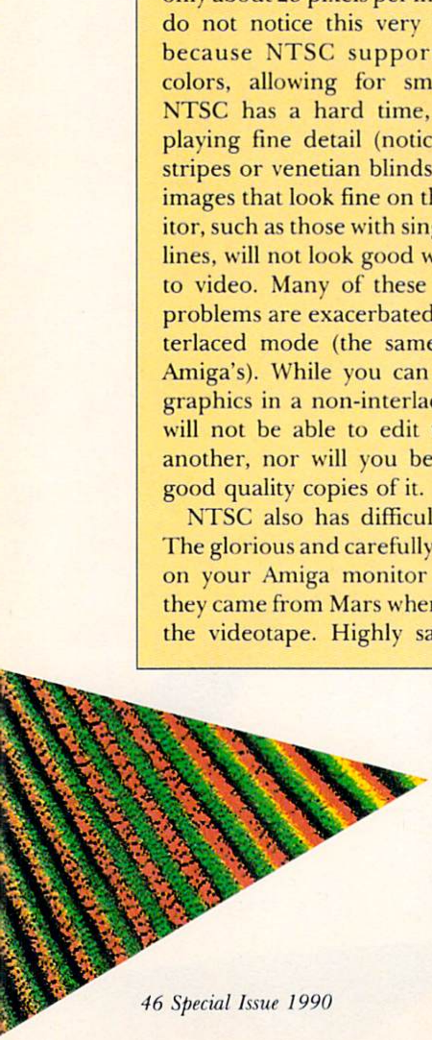
FORMATS OF THE RICH AND FAMOUS

If you have the budget, consider an industrial-quality machine. Industrial equipment provides better output, supports more sophisticated editing features (such as time-code and frame-accurate editing), and holds up better with continued use. They start at about $2400 for an S-VHS recorder/player. A very popular recorder that I have used with considerable success is the Panasonic AG-7500A. With improved Amorphous heads, it can go to three generations with very little loss, especially with an attached time-base corrector (see the sidebar "More Equipment, Better Quality"). It is available for under $5000.

The most widely used recorder for professional applications is Sony's U-Matic ¾-inch format. With its 19-year track record, it has a lot of staunch adherents, but also several problems. U-Matic machines are large, heavy, and difficult to transport (there is no such thing as a U camcorder). They can record only an hour on a tape. They have color ringing ►



(ghosting) problems on successive generations, as well as some chroma shift. They are also expensive, starting around $8000. The even more expensive SP U-Matic recorders do offer a better picture, but many of the problems remain. Also, they do not have Y/C connectors, which makes them difficult to connect to consumer S-VHS, Hi-8, and ED-BETA recorders and to high-end Betacam and MII recorders. Some peo-



Making the Most of NTSC

WHEN TELEVISION WAS introduced, the National Television Standards Committee (NTSC) created a standard video format for broadcasting. With the development of color TV, the NTSC standard was modified to include the new color information yet remain fully compatible with the black-and-white standard—enter the current RS-170A standard.

NTSC's RS-170A combines the luma (brightness, as used in black and white to determine shades of gray) and the chroma (the color information) into one signal. Chroma and luma can interfere with each other, however, creating color smear and unsteady edges in graphics. Most troublesome for Amiga owners, NTSC is very inferior to the quality of an image you can display on your RGB monitor.

The Amiga can display about 70 pixels per inch in hi-res mode. A color television can display only about 30 to 50 pixels per inch, and a VHS or Beta VCR has only about 25 pixels per inch. You usually do not notice this very low resolution because NTSC supports millions of colors, allowing for smooth shading. NTSC has a hard time, however, displaying fine detail (notice how narrow stripes or venetian blinds flicker). Many images that look fine on the Amiga monitor, such as those with single-pixel-width lines, will not look good when translated to video. Many of these low-resolution problems are exacerbated by NTSC's interlaced mode (the same mode as the Amiga's). While you can record Amiga graphics in a non-interlaced mode, you will not be able to edit that tape onto another, nor will you be able to make good quality copies of it.

NTSC also has difficulty with colors. The glorious and carefully selected colors on your Amiga monitor may look like they came from Mars when you play back the videotape. Highly saturated colors tend to bleed and smear. You can take precautions: When adjusting palette colors especially reds and blues in your paint program, keep the sliders below 14 and above 1. When creating highly saturated colors, adjust the S slider to reduce the saturation. Dot crawl, which is a shimmering around the edges of colors, is often caused by abrupt changes in brightness. When bright and dim colors are adjacent to each other, the chroma and luma signals battle for dominance. Smooth color transitions from bright to dark can reduce this problem dramatically. You will also find that many colors look washed out.

Unfortunately, there is no direct correlation between RGB and NTSC. Colors look different depending upon the encoder and VCR you use, meaning your selection of a VCR will have a lot to do with how much loss of quality you want to put up with. More expensive VCRs that go beyond the limitations of NTSC may well be worth the cost if you want a better-looking video. These recorders offer higher resolution and separate luma and chroma signals to reduce picture distortion. Your choice of a VCR will also effect the type of encoder you will need to translate the Amiga's RGB into NTSC. For professional use, $1000 is a typical price for a very good quality encoder. One of the best price/performance values is the CMI encoder (under $100), which you can make Super-VHS compatible through Software Sensations's S-View adaptor ($79.95).

To preview your images in NTSC, hook up a composite monitor (a color television will do) to your Amiga through your encoder. The only way to eliminate all surprises, though, is to play the images back after recording them. You will soon learn what works and what does not. □

—GW

VCR
Recommendations

THE VCRS AND camcorders below have been rated highly by magazine reviews, owners, and technicians. All VCRs have flying erase heads, four heads, and are available for under $2000:

VHS Camcorder

Panasonic PV-430
$1700
Digital effects include wipe, tear, overlap, strobe, split-screen, and dissolve. 8:1 zoom lens, auto date/time generator.

S-VHS

Panasonic AG-450 Camcorder
$1950
Insert editing, audio dubbing.

Panasonic PV-S4880
$1300
PIP, strobe, and up to 16 segment preview digital effects. MTS/SAP.

Panasonic PV-S4990
$1599
First consumer VCR with built-in timebase corrector. Jog/shuttle dial.

JVC HRS-5000
$1200
Faroudja Y/C licensee for high quality S-VHS, real-time counter, insert editing, audio dubbing.

Hi-8

Hi-8 Camcorder
$2200
Control-L connector, real-time counter, insert editing.

Sony EV-S900
$2000
PCM stereo audio, Control-L and Control-S connectors, jog/shuttle dial, insert editing.

ED-BETA

Sony EDU-7500
$1950
Still, freeze, slow motion effects. Control-L and Control-S connectors, insert editing, jog/shuttle dial, MTS/SAP sound, real-time counter. □

—GW

AMIGA HERO

Special Effects Wiz

AFTER JUST ABOUT two years working with the Amiga, it seems that Joseph Conti has already done it all. But really, he is just getting started.

Conti hit the Amiga ground running in 1987 when he hooked up with Boss Film Corp. and its owner Richard Edlund, multiple Academy Award winner in special effects. Edlund's credits include *Star Wars, The Empire Strikes Back, Ghost Busters*, and *Raiders of the Lost Ark*. At the same time, Conti gave up on his expensive IBM PS/2 Model 50, which was "useless for making money."

Under Edlund's tutelage, Conti and his Amiga gained tremendous responsibility. The pinnacle was Conti's work on the film *Diehard*, an immensely popular adventure that starred Bruce Willis, the wisecracking star of *Moonlighting*. While Willis got top billing, Conti's Amiga played a key supporting role in the area of special effects.

One of Conti's real strengths is the building of miniatures for special effects. After all, you can't very well blow up a real building, now, can you? Instead, filmmakers blow up or set fire to miniature models built by the likes of Conti.

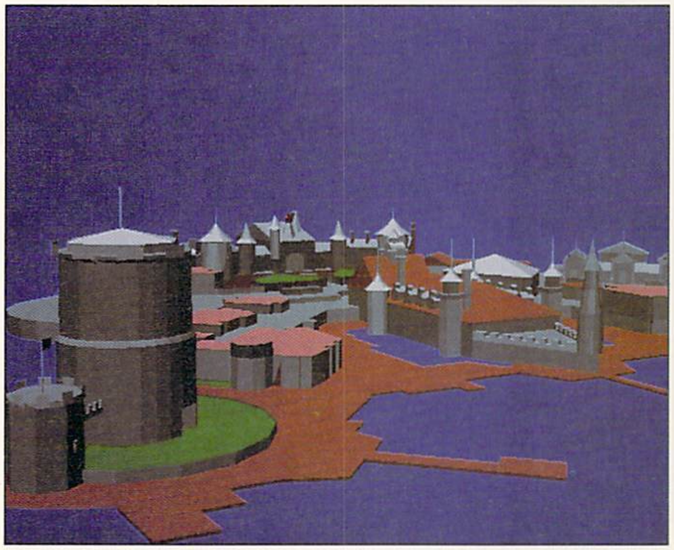
That's the easy part. The trick is to combine the real action film (real people doing real things) with the film of the miniature. If this is not done properly, the result looks like those old Godzilla movies, a look no longer acceptable to the demanding American film audience.

This is where the Amiga comes in. For *Diehard*, Conti suggested using the Amiga to synch the two sets of film. No one knew if it would work, but Conti was given a shot at it. Both the Amiga and Joe came through with flying (and flaming) colors.

Without giving away too many trade secrets, here's how he did it. The crux of the problem was to start out looking at the model of the burning building, and then end up looking at a live action set. And it had to be seamless.

Enter the Amiga, a genlock, and the LIVE! digitizer and software. The basic concept is to have the computer precisely control the motion of the camera as it pans. Conti digitized several frames from the pan down, and then used a live action camera to match the two shots. Using LIVE!, Conti digitized frames from the film that had already been taken, and matched it with photos of the original. He then used a SuperGen genlock to superimpose the miniature video feed. "It worked out great!" Conti said.

Conti then met production designer John Decuir Jr., and moved into a new line of work. Joe and John started work on a variety of concepts for theme parks. Conti started by using the Amiga to put together video presentations of their ideas, which included titling and animation.



Joseph Conti and Sculpt-Animate 4D design a new theme park.

Then Conti introduced Decuir to 3-D graphics and began doing 3-D wire-frame illustrations to show the scope of their projects. In fact, Conti has been able to sculpt entire buildings and do video walk-throughs of the parks using the machine's animation capabilities.

Conti begins with a top-notch illustration or blueprint of the park. This includes a side view and a view from above. These are digitized and shuffled into Autocad for the IBM PC. Using the Acad translator, the file is converted to AmigaDOS format and put into a Sculpt-Animate 4D scene. Then Conti creates every building by hand and begins to add detail. If he needs a fully shaded rendering, but not the animation, Conti will put the image into Turbo Silver using Interchange.

Conti now serves as a consultant for Cinematics Design Inc. of Glendale, California, and consults out of Los Angeles with individuals and corporations on maximizing the power of the Amiga.

—Doug Barney

ple claim that third-generation recordings look better than S-VHS, but I think this is debatable, especially with the color-comb and noise-reduction circuitry found on newer S-VHS recorders. My feeling is that the newer Y/C machines will catch on rapidly and that the U-Matic format will slowly fade away.

For very high quality, you can choose between Sony's very popular Betacam or Panasonic's MII, both of which offer picture quality comparable to one-inch tape (the broadcast standard). You can go up to ten generations with minimal loss of picture quality. Of course, you need $30,000 to start.

If your bankroll exceeds $80,000, you can choose D2 format and enter the exciting realm of digital video. D2 is almost indestructible, and you can record and edit it an unlimited number of times. Eventually, all video will be digital. For now, it is a very expensive option.

With the right VCR and your Amiga, you will have in your hands one of the most powerful combinations of tools available. With a little imagination, you can create videos that will astonish even seasoned professionals. ■

Geoffrey Williams is Executive Producer of Creative Business Communications and head of the Amiga Video-Graphics Guild. Write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*



Although the only painting Madame Mao and her three counter-revolutionary cohorts probably got to do was whitewashing out-of-favor slogans off public walls, this "Gang-of-Four" Amiga paint programs should provoke a cultural revolution of graphics possibilities to use in your animation and video creations.



The Gang of 4

By Roger Goode

FOUR AMIGA PAINT programs have emerged as the best of the bunch: DeluxePaint III, DigiPaint 3, Photon Paint 2.0, and Deluxe PhotoLab. Which one should you buy? It depends. What are you going to use it for? How much additional memory and equipment can you afford? And, are you really serious about owning only one paint program?

Once you have considered these questions, it's time to take a close look at each of the four.

DeluxePaint III: Graphics Workhorse

Although it may seem like comparing apples and oranges by lumping DeluxePaint III (Electronic Arts, $149) in with three HAM (Hold-and-Modify) programs, it does more than just hold its own. DeluxePaint has long been the program of choice for most Amiga artists, and whether it employs Hold And Modify or not, it still sets the standard for speed, workability, and ease of use by which all other programs are judged. Currently in its third incarnation, DPaint's basic tools have been greatly refined; it now supports true Overscan mode painting and Extra_Halfbrite mode colors, and it provides marvelous animation features through its new Animation module.

DeluxePaint is my graphics workhorse. Whether I'm creating a picture from scratch, making an animation, retouching a digitized picture, or doing any number of other graphics projects, I reach for DPaint. It is particularly helpful when used in conjunction with other graphics packages—perhaps to begin a picture that may be completed later in a HAM program, where additional effects may be added or elements combined whose colors together may exceed DPaint's limit of 32. DeluxePaint is also excellent for creating titles and special effects for videos (it supports overscan and color zero), textile design, editing (cleaning and enhancing) digitized pictures created in 32 colors or in black and white, concept sketches, creating or editing pictures for use with desktop-publishing programs. . .just about anything you might put your mind to.

With DPaint III, "Anim painting" provides an astonishingly easy way to create animations, while "Animbrushes" used with the Pick Up option offer a neat way to add special animation effects. A full range of other animation tools allows you to manipulate sequences in detailed, frame-by-frame fashion. Now, as well as creating backgrounds and objects for use in animations, you can create the animations themselves, and for purposes of video, do storyboards and add dynamic title sequences. (For a thorough discussion of animating with DeluxePaint III, see "How to Make a Fish Sneeze," p. 82.)

The only major drawback to DeluxePaint III is that it won't do HAM mode. While 4096 colors is an ►

ICON ILLUSTRATED BY JULIA TALCOTT



DeluxePaint III's color palette makes it easy to adjust colors.

attractive proposition, DPaint's numerous special features and ease of use add up to some great-looking images and effects from a mere 32 colors.

Digi-Paint 3: Fast and Friendly

NewTek's Digi-Paint was the first of the HAM paint programs, and the new version, Digi-Paint 3 ($99.95), is the one to beat for speed, versatility and professional applications. Its user interface is clean, well thought out, and fast. In fact, where speed is concerned, Digi-Paint 3 is the only HAM package that can rival DeluxePaint. It is written entirely in assembly language and supports 68020 processors.



A black-and-white digitized picture is colorized with Digi-Paint.

Digi-Paint 3 comes with four separate but fully integrated toolboxes that allow you to switch from one set of operations to the next with ease. Its default toolbox has all of the tools you would expect to find, save Flood fill, which I sorely miss at times. A smartly designed Text Rendering toolbox delivers a chosen text string as a brush attached to the mouse pointer, ready to be stamped down or further manipulated as any brush might be. The Text tool supports a variety of fonts and sizes, including the ColorFonts (InterActive SoftWorks) standard, and can be set in bold, italic, and underlined as well. If you're looking for a powerful title-screen generator, this would be a great place to begin.

The real power of Digi-Paint 3 is in its professional-level Controls toolbox and Modes menu. Whether you're creating an image from scratch, working with text, enhancing an imported image or a digitized picture, there is some tool or combination of tools here to make your life easier. The Transparency tool can do anything from colorizing black-and-white pictures (or vice versa if need be), to seamlessly blending elements of different pictures together. I'm impressed with how well Digi-Paint blends edges. By adjusting the outer extremes of a brush to high transparency and leaving the center opaque, you can stamp a brush down on any part of a picture and it will look as though it's always been there. The real joy in using the transparency controls in Digi-Paint 3 is in the subtleties that it allows in putting just the right finishing touches to an image.

There is also a Texture-Mapping control here that provides the same sort of ease and finesse as the Transparency control. Although a lot of distortion is often the result of texture-mapping (where an image is warped into a different size or shape), Digi-Paint 3 minimizes this distortion, and with careful use, it can yield some pretty impressive effects. I find it particularly useful for resizing elements of one picture to match scale with another picture. I've used it to enlarge some objects by a fairly large factor with surprisingly little loss in apparent resolution.

Perhaps my favorite design feature of Digi-Paint 3 is the combined use of the Undo and Repeat tools that are provided as buttons in every toolbox, as well as in keystroke commands. Using these two buttons and the space bar, which halts any current operation in midstream, will greatly speed up any painting session. You begin by drawing a shape or an operation to the screen *once*, then apply the Undo command and change a setting or mode, or any combination of settings, and then hit Repeat to see a variation of your last operation without having to redraw. If the operation is a lengthy one and you see that it's not producing the desired results, simply hit the space bar to terminate the operation and use Undo again to start over. You can do this as often as you like, and you can layer one effect over another if you wish

(as long as you don't actually use a different tool before using the Repeat command again). There are other programs that employ these tools, but the way they're set up in Digi-Paint 3 elevates them to a sophisticated working environment.

Finally, Digi-Paint 3 comes with a second program disk called Transfer 24 (many will recognize this as the Controls section of the driver program of NewTek's Digi-View digitizer). Transfer 24 is a simple image-processing program that will allow you to perform a number of powerful, overall operations to your picture files and to change the display mode they're in. (See "Global Operations," p. 112.)

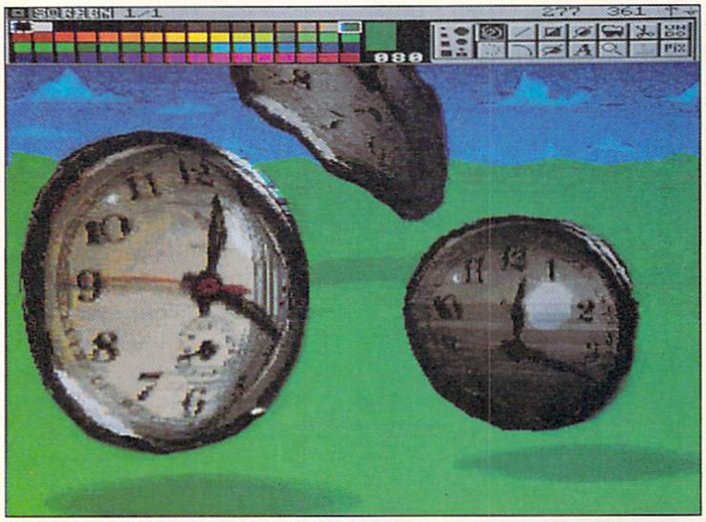
PHOTON PAINT 2.0: THE "SPECIAL-EFFECTS MACHINE"

When MicroIllusions' Photon Paint was introduced, it was heralded as the program that would take the place of DeluxePaint, Digi-Paint, and all the others. While it didn't quite live up to such exaggerated advance billing, Photon Paint did make its mark at the time by setting new standards for cleaner HAM images and offering an impressive array of tools of its own. With the release of version 2.0 ($149.95), Photon Paint has found its niche as a graphics tool with certain advanced features and options not found in any other HAM package. Of the four programs discussed here, it is the one most geared toward creating special graphics effects.

Aside from the standard paint tools, Photon Paint also sports a wide selection of paint modes for blending, tinting, colorizing, and adding a variety of offbeat color effects to your graphics. The 2.0 release adds separate menus that allow you to control independently the mode settings for each of the two mouse buttons. So while the left button is set on one function, the right button can be set for another, eliminating the need to go to the menus as often.

Photon Paint's most outstanding feature is its version of surface and contour mapping. Photon Paint takes an entirely different approach from that of Digi-Paint 3 by incorporating a form of ray tracing. For surface mapping, Photon Paint presents you with a set of standard shapes onto which you can map a brush. You can also set the degree and direction of a light source for your object. While this feature can produce some impressive effects, the amount of distortion and resolution breakup makes the overall result a little disappointing.

With the contour-mapping feature, you design the shapes and surfaces onto which you will then map your brushes. You begin by creating a sort of gray-scale topographic map that the program then transforms into a wire-frame object you can twist and turn about in three-dimensional space. Once you are satisfied with your object, it can be hit with a light source before "draping" your picture brush over it. You'll need a lot of practice with this tool before it will yield controllable results, and the computing time required calls for some patience, but the finished effects can be remarkable.



Photon Paint's contour mapping was used to wrap clock face into different shapes.

Photon Paint also offers other interesting tools and effects, including: Stencil (a masking feature that allows you to define an area of the screen that won't be affected by painting operations); Pantograph (works like its namesake by allowing you to duplicate parts of a picture from one area of the screen to another by simply tracing over them, which is especially useful for touching up sensitive problem areas); and Shadow (automatically drops in a shadow beneath a brush or drawn object according to your specifications). There is also a Cycle draw option that works like the one found in DeluxePaint, but is unusual in a HAM program.

Photon Paint is the first HAM program to offer an Animation module for creating and editing HAM animations—a feature that will undoubtedly prove popular. The module also functions as multiple spare pages for storing loads of clip art that can be used in the creation of complex paintings. (For tips on creating better HAM animations, see "Fine Art in Motion," p. 96.)

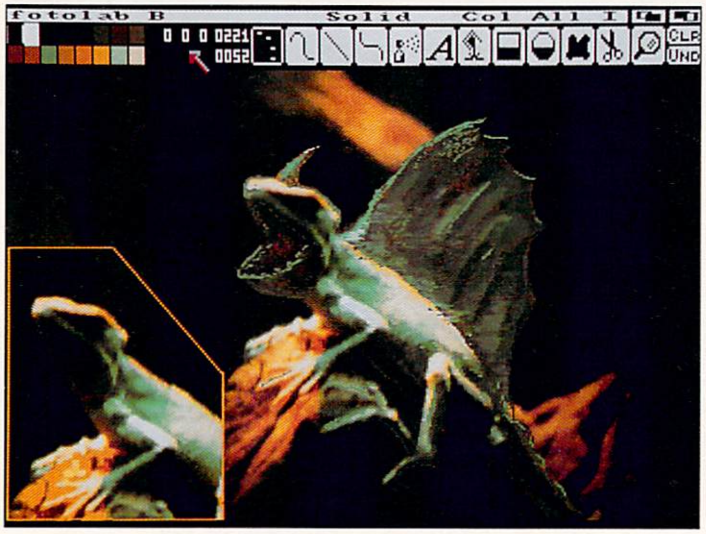
Overall, Photon Paint offers quite a lot in one package, but it should be noted that a lot of its functions are extremely memory-intensive, and therefore very time-consuming. Lengthy operations can become frustrating and distracting when you're trying to keep your creativity flowing.

DELUXE PHOTOLAB: AN ALL-IN-ONE PACKAGE

On the face of it, Deluxe PhotoLab (Electronic Arts, ►

$149.95) could be the most likely answer to the big "If I could only buy one..." question. But let's take a closer look. PhotoLab's main claim to fame is that it houses three separate graphics programs under one roof: Posters (a flexible, easy-to-use print utility capable of organizing and printing out projects as large as ten square feet); Colors (a full-featured image-processing program); and Paint (in itself, arguably, two paint programs rolled into one). (For a detailed discussion of Colors, see "Global Operations," p. 112.)

Perhaps Paint's greatest virtue is that it operates in all of the eight display modes currently recognized by the Amiga: Lo-Res, Hi-Res, Extra_Halfbrite, HAM, and Interlace in each of the four. If you work in any of the standard paint modes, you benefit by their greatly increased speed. Working in HAM mode



A lizard (inset) is turned into a prehistoric beast using PhotoLab's tools.

will slow things down considerably, but it offers many of the special color options found in other HAM packages. In order to switch from one mode to the other, however, you must first exit the program. Thus, the programs may as well be on separate disks.

When you first start up Paint, you can choose your graphic mode and resolution, as well as determine the number of bitplanes and colors you'll be using. In the 32-color (or less) mode, you'll find that PhotoLab shares a number of operating conventions with DeluxePaint (naturally enough, since they're both Electronic Arts products). Unfortunately, PhotoLab doesn't share DPaint's huge resource of special tools and paint modes. Basically, what you get here is a standard 32-color paint package: fast, dependable, but not powerful enough to compete on its own.

The same is true when you switch over into HAM mode. All of the basic tools are there, as well as many of the special modes for colorizing, enhancing, and manipulating HAM images. When compared to either Digi-Paint or Photon Paint, however, there's a lot that is conspicuously absent. Also, when compared to its counterparts on either side of the HAM barrier, PhotoLab doesn't compare very well in terms of speed.

None of this is to say that PhotoLab isn't a good program—it is. Yet, when matched up in a head-to-head comparison with the competition, it simply does not offer the same power, special features, and effects. On the other hand, it is the only program that offers so many basic tools in so many working environments on one disk.

Recommendations

The first consideration in choosing a paint program is ease of use. A program's interface shouldn't get in the way of the artist. No matter how fancy the tools are, if they're difficult to use, or too slow, they're going to hinder good work. The two programs that take the honors for speed and usability are DeluxePaint III and Digi-Paint 3.

For designing logos, product labels, and package comps, DeluxePaint III is the best bet. A strong, simple flat graphic works best for any of these purposes, so work in high resolution for the cleanest line, and don't worry about the loss of colors. Once you have a satisfactory design, you can use the palette requester to try an endless number of color combinations until you've hit on just the right one.

Desktop-video users have their choice of all four of these packages, because they all support interlace, overscan, and color zero. If you wish to add graphics and special effects to your video projects, you should use the same basic considerations for choosing a package as you would for any of your other graphics needs. Which is the easiest to use? Which has the combination of tools you want? If all you want to do with your videos is add titling and text, I recommend either DeluxePaint or Digi-Paint for their ease of use and highly sophisticated results. Also, DeluxePaint can provide animated title sequences. Photon Paint has the animation capability as well, but it's more complicated to use; 32 colors is plenty for a title screen, anyway.

Animators have a clear choice in DeluxePaint, with its stable of great painting tools, and an animation module that is so easy to use that you'll be making simple animations in a matter of hours. If you want to produce animations in HAM mode, then any of the other three will work for making background pictures and for creating the objects and characters that will move across them. Of course, Photon Paint has an animation module as well, but because about 90 percent of animating involves creating the drawings that make up the individual cels, you should

Quick Fix #1

Dissolving the Barriers

I DO A lot of scene transitions in my animations. Fades, wipes, and dissolves are a big part of my style. Any of the animation programs I use do a great job on the fades and wipes, but the quality of the dissolves have always bothered me. A real dissolve is simply the process of slowly fading one picture into another by varying the brightness of the two images. What we get on the Amiga is not a real, but a pixel, dissolve. Instead of superimposing both pictures on the screen, the software replaces the pixels of the foreground picture with those of the off-screen image. This is a nice effect, but not what I want.

In vain, I waited for a dissolve feature to show up in a mainstream animation program. Finally, I gave up and devised a way to achieve this effect with almost any paint program.

Because you are mixing together two pictures with different palettes on the same screen, you will need the full complement of your Amiga's 4096 colors in order to create this effect. Fortunately, the current generation of Amiga HAM paint programs provide all the necessary tools. Digi-Paint 3 and Photon Paint 2.0 are particularly well-suited to this project. Regardless of which program you decide to use, the procedure is essentially the same, only the names of the tools vary. For Digi-Paint 3, use the Transparency mode; for Photon Paint 2.0, the Blend selection.

To create the dissolve you must create an animation. The animation is simply a frame-by-frame representation of the transition from one picture to the other. I have found that a range of three to twelve frames to be effective, depending on the speed you want to apply to the effect.

The process is simple but tedious. The first step is to create two separate sequences—a fade-out for the source image and a fade-in for the destination. The procedure is the same for both pictures, but you will reverse their order later. Load the image as a brush. Select the Transparency or Blend mode from the brush menu. Now stamp the brush on a blank screen, once for each frame of the dissolve. For example, the first frame is solid, the second about 90% solid, the third 75% and so on until the last frame is blank (or 0%). Save each frame as a new picture and clear the screen, ready for the next frame.

To combine the two parts, leave the program in the Transparency mode with the level set to 50%. Load the first frame of the source image as a picture and the last frame of the destination image as a brush. Stamp the brush on the picture and save it as your first completed frame. Repeat the process for each frame of the dissolve, progressing from first to last for the source image and last to first for the destination. Load the completed frames into your favorite HAM animator and create a short Anim sequence to see the results. □

—Gene Brawn

consider using the faster Digi-Paint to create the bulk of your graphics and then enter them into Photon Paint to animate them.

If you want to give Ted Turner a little competition and try your hand at colorizing black-and-white pictures, then you're definitely talking about a HAM package. All of the HAM programs have a selection of tools and modes for colorizing and a variety of other color-modification techniques, but my favorite by far is Digi-Paint 3. Here is a tool that is easy enough for a beginner to use, but sophisticated enough for the professional.

There is no reason why you couldn't use the tools provided with any of the HAM programs to start a picture from scratch, but the working limitations imposed by the complexity of manipulating HAM images makes many operations terribly cumbersome (in comparison with DPaint). Even worse, they can disrupt the all-important creative flow. For this reason I tend to think of HAM paint programs primarily as tools for editing digitized pictures and creating special effects; I find myself being gradually swayed, however, by the friendly working environment and quick response of Digi-Paint's array of tools.

One very nice thing about HAM programs, and this includes all three discussed here, is that they'll accept images from virtually any source, as long as it uses the IFF standard. For instance, Digi-Paint 3 will allow you to work on image files created in Sculpt-Animate 4D (Byte by Byte, $499.95) or Turbo Silver 3.0 (Impulse, $199), as well as any paint program. This includes HAM images, digitized pictures in any number of colors or black and white. You name it.

All four of these programs work best with additional RAM. An extra meg will do for most, but don't stop there if you can afford more. Also, you'll want to consider purchasing a digitizer. Whether you're a trained artist or not, digitized images will provide an endless source of raw material for you to work with. With your own digitizer you can put anything within reach (that doesn't bite) onto your Amiga screen.

If you're really serious about owning only one paint program, I would have to recommend Digi-Paint 3. It supports HAM mode but still offers the speed and intuitive feel that make using it a pleasure. Its Transfer 24 image-processing utility provides the additional advantage of being able to change your finished graphic to any mode or resolution you may need.

If you can afford to buy more than one, do yourself a big favor and get DeluxePaint III as well. With Digi-Paint and DeluxePaint both working for you, you'll have the ultimate in sophistication, power, and speed for the creation of 2-D Amiga graphics. (See the Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.) ■

Roger Goode is Art Director of inCider *magazine. He uses Amigas extensively for graphics work. Write to him c/o* AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Who's In Sync?

Comparative Reviews of 10 Amiga Genlocks

Find out who does what best for how much when it comes to combining Amiga graphics with external video.

By Joel Tessler

WHEN GENLOCKING GEAR first became available for the Amiga, things were simple. You hooked up the genlock, and it didn't work! Thankfully, things are different today. There are a number of reliable, high-quality genlocks on the market, ranging in price from under $200 to over $2000. You want the best, no doubt, but will that put you immediately in the $2000+ category? Not necessarily. Considering the diverse user base in the Amiga video community, there are numerous bests.

In testing ten Amiga genlocks, I recommended each for at least one of the following applications: Home, Industrial, or Broadcast video. Although the differences between these categories are beginning to blur as technology advances, they will give you an idea of whether a unit is appropriate for your needs. (In the product headings for each genlock, the recommended use is given as H, I, and B, respectively. The Amiga system—A500, A2000-series, etc.—supported by the genlock is included, as well as the broadcast-signal standard(s)—the American NTSC [National Television Standards Committee] or the European PAL.)

To help determine which category each genlock was suited for, I used standard EIA (Electronic Industry Association) color bars to test the units on a waveform monitor for their handling of lunimance, sync, and burst, and on a vectorscope for hue and color saturation. (See the sidebar "Let's Get Technical" for photographs of the test results, and an explanation of how to interpret the readings.)

I did not use the waveform and vectorscope test results alone to determine the appropriateness of a genlock for an application, however. I also put each through its paces in real-world VHS, S-VHS, and ¾-inch edit systems (where the genlock interfaced to both a player and a recorder VCR). In each edit suite, I used Broadcast Titler (InnoVision Technology) to see how well Amiga graphics held up over source video.

To give you a further indication of my opinions, I gave each unit an award based on its unique characteristics. *(See Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)*

4004, 4005 Genlockable Video Graphics Encoder
Magni Systems
$1695 ($1995 with remote-control unit)
Recommended Use: B, I
System: A2000-series
Signal: NTSC, PAL

The Magni name carries a certain air of credibility in video circles, and the company's genlocks, 4004 (NTSC) and 4005 (PAL), were built by professionals for professionals. Each unit consists of two boards: One installs into the A2000 video slot and the other into an IBM slot. My only complaint with this setup is that it precludes the use of other hardware designed for the video slot.

The vectorscope proves that the Magni's signal is as clean as a whistle. The Magni funtions well in upstream and downstream switcher configurations because of its built-in system-timing controls. A separate control box features large buttons and fader bars, making it convenient to punch in and fade out graphics. For industrial use, the Magni shines because editing does not affect the source video, and Amiga videographics remain clean and sharp through generations of dubs from the edited master. It's also ideal for a broadcast studio or a direct-to-post edit suite.

Unfortunately, Magni genlocks do not support the increasingly popular S-VHS format. Maybe an up-

Let's Get Technical

A *VECTORSCOPE* TESTS a genlock's output of color saturation and phase (hue). The vectorscope display looks like a pie cut into eight pieces. Six of these pieces represent different colors. Within each slice is a large box (outlined in four corners) with a smaller box inside. If the line representing the signal falls within the smaller box, saturation is considered correct. If the signal falls outside the small box, but within the large box, saturation is acceptable (the nearer to the small box, the better). When the signal line lands outside the large box, as with the AmiGen, you have trouble.

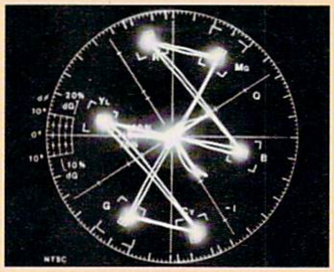
A line runs from the center of the pie through the small box to the edge of the scope. The closer this line is to the edge of the pie, the greater the color's saturation level. The closer it is to the center of the circle, the lower the saturation. Ideally, this line should fall on the target in the small box. Oversaturation causes "hot" video (blurry images with white edges) and "blooming" (curvature at the edges of the screen), among other problems. Undersaturation, on the other hand, can cause color washout, and a total loss of color when making dubs. Finally, the lines connecting the chroma dots should be straight. Curved lines indicate poor differential gain, which causes sync problems.

Phase accuracy is determined by the distance of the signal line to the small box, in a clockwise or counter-clockwise direction. As with the tint control on your television set, the direction of the signal line's displacement indicates color shift. If the line is to the left of the small box, you will get a reddish tinge; to the right, green.

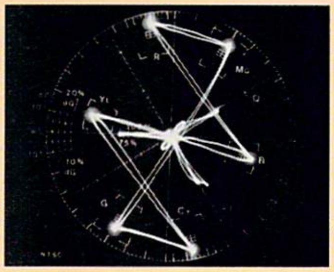
A *waveform monitor* will provide readouts testing output of luminance and sync/burst. The luminance stairway's steps should be of equal size—the thinner the better. The top step, which represents the white peak, should be centered on the 100 IRE line. If it is higher than that, the signal is too hot. The bottom (or "pedestal") step, which shows the black level, should be centered on the dotted 7.5 IRE line. If the pedestal step is too low, you lose detail; if it is too high, blacks look gray and everything is a bit washed out.

The sync/burst reading is the U-shaped signal flanked on both sides by zig-zag lines. Where the signal drops and flattens out, you should look for a clean, straight, horizontal line at −40 IRE. Any waviness or jiggling indicates ringing, which results in scan lines on your picture and noticeable degradation of the image. To the right, the signal enters a 3.58 MHz reference oscillation. The peaks of the oscillation should run between the +20 and −20 IRE lines. Deviation from this indicates a "rolling off" of the signal, and is manifested in a poor high-frequency response curve.

I would like to thank MPCS of Hollywood, Florida for letting me have complete run of their video lab in testing these genlocks. □ *—JT*



4004



Omni-Gen



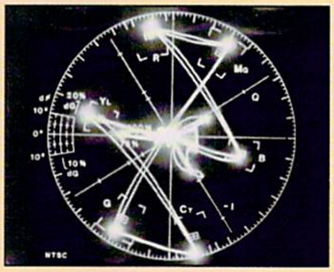
A2300



ProGEN



AmiGen



Scanlock VSL-1

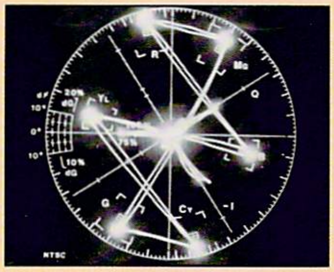
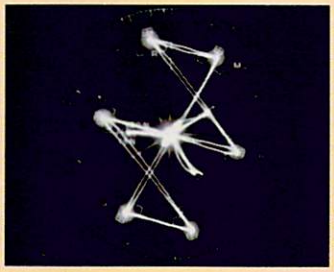


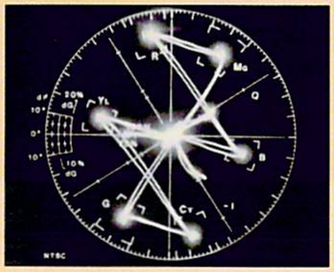
Image Master



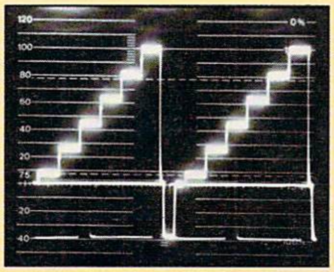
SuperGen



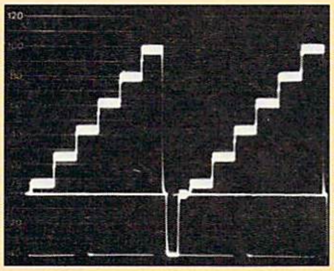
miniGEN



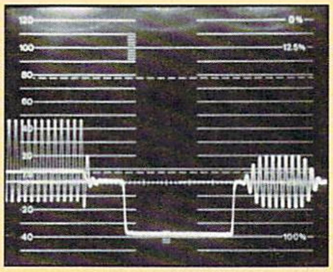
SuperGen-2000S



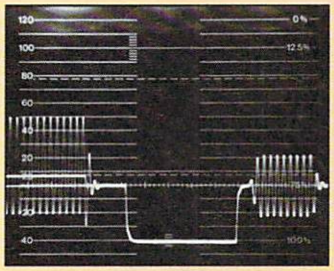
4004



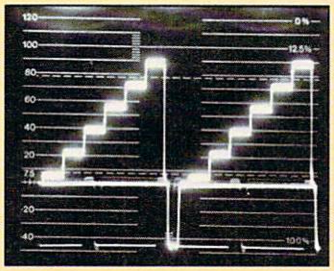
Omni-Gen



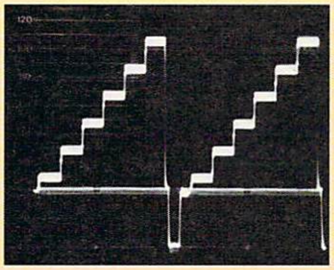
4004



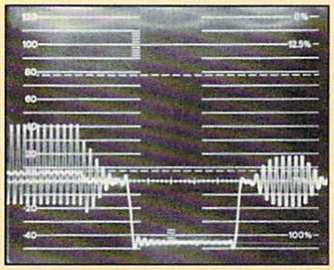
Omni-Gen



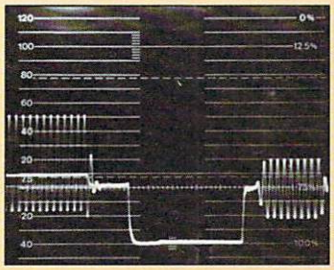
A2300



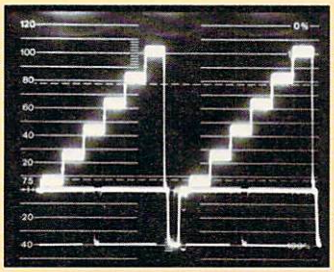
ProGEN



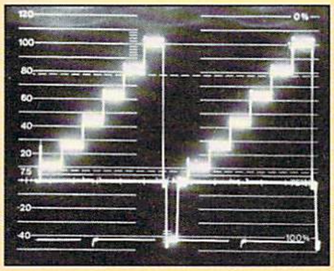
A2300



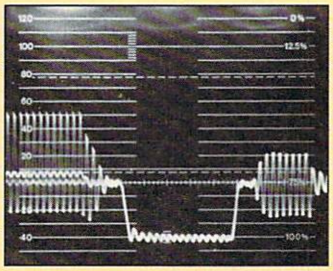
ProGEN



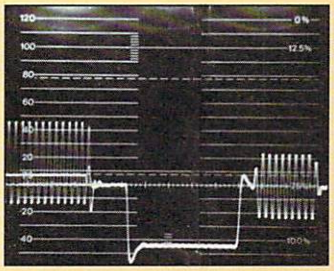
AmiGen



Scanlock VSL-1



AmiGen



Scanlock VSL-1

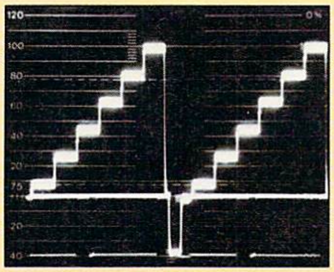
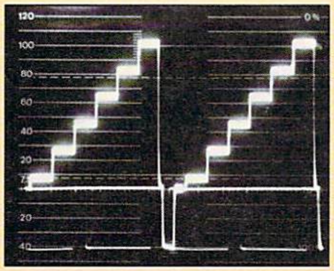


Image Master



SuperGen

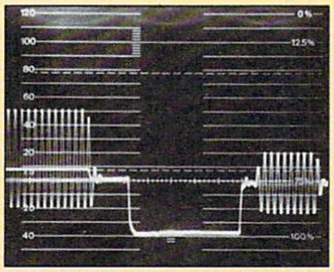
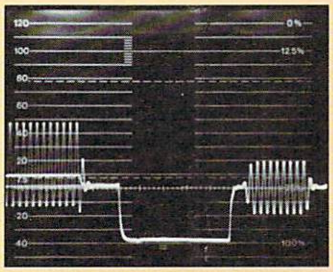
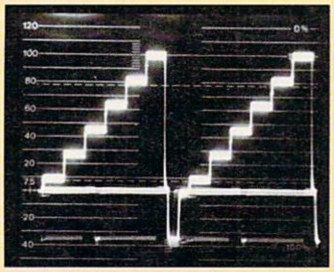


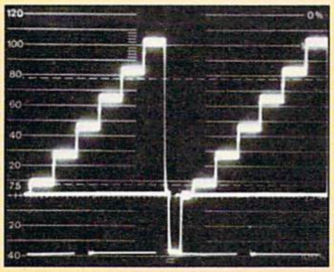
Image Master



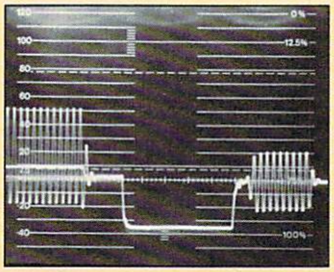
SuperGen



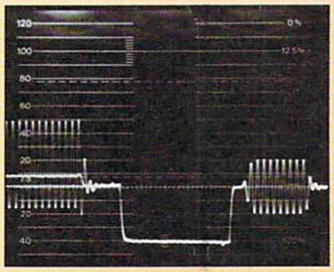
miniGEN



SuperGen-2000S



miniGEN



SuperGen-2000S

►

grade will take into account more of the Amiga's architecture and get the price tag down. Magni gets the "Squeaky Clean" award.

A2300
Commodore Business Machines
$399
Recommended Use: H, I
System: A2000-series
Signal: NTSC, PAL

The A2300 installs into the video slot of an Amiga 2000: There are no dangling wires, power supply, or special boxes. Its ability to feed an external video signal (video tape, laser disk, video camera) directly to the RGB monitor in combination with RGB Amiga graphics makes it well suited to interactive video.

The A2300's problems became apparent when I tested it with the vectorscope and waveform monitor. The sync was too "hot," the luminance far too low, and the burst was completely fallen off and ringing. Running videotape through the A2300 and overlaying text produced acceptable results, but when I displayed a full graphics screen, signal instability proved overwhelming. The manual contains extensive documentation on internal adjustments and procedures, which just might correct some of these problems—but don't hold your breath. This genlock is suitable only for home use or for low-end interactive applications. Commodore gets the "Nice Try But No Cigar" award for the A2300.

AmiGen
Mimetics
$199.95
Recommended Use: H
System: Any
Signal: NTSC

With its built-in RGB loopthrough, separate hue and level controls, and attractive, compact, and intelligently designed case, AmiGen appears impressive. Unfortunately, its beauty is only skin deep. I fed it a perfectly coherent video signal in a variety of settings, and in every case got back some of the most bizzare output I have ever seen. With a little work on the electronics, AmiGen might fly, but for now I cannot recommend it. AmiGen gets the award for "Special Defects."

Image Master Pro
Neriki
$2195
Recommended Use: B, I
System: Any
Signal: NTSC, PAL

Neriki's Image Master has received high ratings from the broadcast press and the Amiga video community. Its design takes into account the needs of broadcast, direct-to-post, and high-end industrial facilities. The Image Master comes in a 19-inch rack-mountable housing. An assortment of connectors on the rear panel allows for Video In with loopthrough and termination toggle, Composite Out, RGB Out, and separate Sync Out. There are also RGB Amiga connectors allowing for monitor loopthrough. There are switches for 180-degree chroma phase, fine chroma phase, and power. I am not clear why a rotary luminance keyer is provided for graphics control, but with it you can key in Amiga graphics. You can bypass the keyer, but doing so locks out the ability to perform dissolves except via a switcher or special software.

The vectorscope readings were good, chroma saturation was a little high, phase was dead on, the stairway was solid, and the burst was clean. In editing, the Image Master performed well except for once refusing to accept a video-tape signal (which worked fine with the other genlocks). Perhaps the Neriki is finicky about the incoming signal quality. At a price of $2200, the lack of an internal sync generator and dissolve faders has me slightly confused. Two years ago when little else was available, the Image Master was a great buy. Now, however, some of the newer genlocks offer a better value. Neriki is said to be coming out with a new line of genlocks, and I look forward to seeing not only the features but the price tags as well. The Image Master gets the "Quality Equals Cost" award for its high performance and equally high price.

miniGEN
Progressive Peripherals & Software
$229.95
Recommended Use: H, I
System: Any
Signal: NTSC

In direct contrast to AmiGen, miniGen proves small can be beautiful. Housed in a plastic case and sporting one RGB connector, a three-way toggle switch, and a pair of female RCA plugs, this little jewel doesn't look like much—but it sure can perform (especially considering its price)! In vectorscope and waveform tests, luma stairway looked good, the burst was hot, and the hue was right on. Color saturation was a bit high and the signal a little too hot, but in the edit suite, source footage looked good running through miniGEN and titles held up well. Some colors, including red, were unstable, but by reducing the graphics' overall saturation in DeluxePaint III (Electronic Arts), I was able to achieve better results.

Although this unit will not produce the super-clean results of high-end genlocks, if you light your scenes carefully, your footage will have a cleaner signal. Also, I recommend using a composite display when working up the graphics for your edit. With composite mode, what you see is what you will get. miniGEN is not for broadcast applications, but for home and industrial video it's fine. miniGEN gets the "Genlock for the Rest of Us" award.

AMIGA HERO

Keeping Busy

IF YOU WATCHED last year's Superbowl, you saw Joel Tessler's national debut—not on the field, but rather, above it. That is where Tessler's innovative scoreboard animation system, used for all Miami Dolphins home games, really hit the big time. (See "Move Over, Fridge!", Notepad, in the Nov. '88 issue, p. 10.)

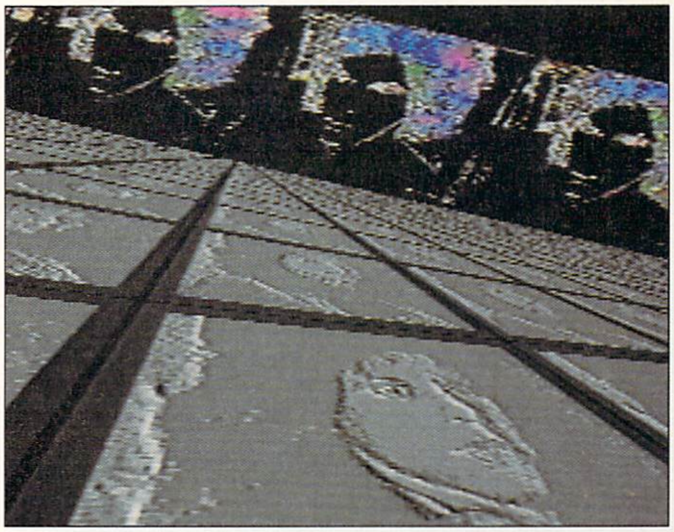
You may be one of the many Amiga enthusiasts who have heard of Tessler, but there are things that few people know about him. He played drums with Jim Stafford ("Spiders and Snakes") and toured with the band for a year. He also did some underground radio work.

Even fewer know that Tessler created a 60-second commercial for a popular flashlight that got loads of play on a variety of cable stations. Mini Maglight is both a miniature flashlight and the name of the company that makes it. Working with independent producer Stephanie Sladon, Tessler created a piece of animation in which the flashlight appears, with its individual components highlighted separately. To show the different types of beams, Tessler used color cycling, a trick at which the Amiga and Tessler are particularly adept. The products that Joel used for the project are almost standard fare for Amiga video and animation pros: an Amiga 2000 with a robust eight megabytes of RAM, DeluxePaint III (Electronic Arts), Zoetrope (Antic), PIXmate (Progressive Peripherals), and the original SuperGen (Digital Creations).

Tessler also created an animated logo used by Ryder Truck Rental that is used in ads and corporate industrial videos.

Tessler recently filmed jazz greats Freddie Hubbard and Dizzy Gillespie in concert, did the post-production work with the Amiga, and is now negotiating to send the product over to Europe, where jazz is still immensely popular.

A true ball of fire, Tessler's ambitions exceed his past accomplishments. His Amiga plans include setting up a service bureau for cable stations, finishing a rock video called Background Radiation (it happens to be about television), and acting as an adviser for a cable TV show called *Ocean Walk* that is to be done completely by teenagers.



Joel Tessler's animated self-portrait.

Besides creating on the Amiga, Tessler is a staunch advocate and teacher. "People look at animations done with Sculpt-Animate 4D and say they could never do that." Tessler doesn't buy it. Instead, he brings them into DeluxePaint III and has them do a thing or two to gain some confidence.

The result may be a new generation of animators and video producers who base their work on the Amiga. For Tessler, the power of the Amiga, combined with its low price, opens up unimagined opportunities. "The Amiga breaks down entry barriers to the video and animation industries," Tessler said.

We just may have to do another profile of this busy *AmigaWorld* author again next year!

—Doug Barney

Omni-Gen 701
Omicron Video
$1595
Recommended Use: B, I
System: Any
Signal: NTSC, PAL

Aimed squarely at broadcast, direct-to-post, and high-end industrial facilities, Omni-Gen is loaded with features including internal sync generator, separate Y-C for S-VHS Out Only, comb filtering, and 360-degree subcarrier-phasing adjustments for the Amiga. The Omni-Gen is packaged in a standard 19-inch rack mount, and its unique pull-off front panel allows for easy access to a variety of trim potentiometers and DIP switches. A separate remote-control box with key-fade, fade-black-to-program, key-on, program-video, and Amiga-video buttons is supplied.

When I first tried out the unit, I had a problem with horizontal stability. Omicron's technical support representative suggested making a slight adjustment. This took care of the problem, and thereafter, Omni-Gen performed well in all tests. Graphics overlays were super clean, and the incoming video was totally unaffected by the Omni-Gen. Vectorscope readings were good, although chroma was a bit oversaturated. The Omni-Gen's components are durable and of high quality; this genlock should be able to handle any broadcast studio configuration. Although S-VHS is not fully implemented (S-VHS inputs are not supplied), Omni-Gen is one of the finest Amiga broadcast genlocks available. Omni-Gen gets the "Heavy Duty Broadcast" award.

ProGEN
Progressive Peripherals & Software
$449.95
Recommended Use: H, I
System: Any
Signal: NTSC

ProGen's simple design features RGB loopthrough and Video In and Out. It is powered by the Amiga, and using it with an A1000 requires a slight modification. Although ProGEN does not provide faders, you can select Video Only, Computer Only, Com- ►

puter and Video with the software—either via menus or function keys. In the S-VHS edit suite, I had to disable a servo switch on the VCR in order for the recorder to tolerate ProGEN's video signal.

ProGEN delivered above-average performances in all testing environments, although displaying a full graphics screen in Computer-Only mode produced some tearing and bleeding. I was able to reduce these effects by adjusting the graphics' saturation in DeluxePaint III. A year ago I would have recommended ProGEN heartily, but in light of recent advances, I suggest looking at what else is available. Even though it is double the price, ProGEN performs no better than Progressive's other genlock, miniGEN. ProGEN gets the "Early Bird" award because it was one of the Amiga's first genlocks.

SuperGen
Digital Creations
$799
Recommended Use: I, B
System: Any
Signal: NTSC

Digital Creations was one of the first companies to consider the Amiga's operating system in the design of a genlock. The resulting SuperGen has become a standard for affordability and high performance, and it is no accident that other developers have designed products to support it specifically. The unit is simple to use: Just plug the SuperGen into your Amiga's RGB port and loop the RGB cable to the monitor. SuperGen has built-in faders for computer and video, with two separate video-overlay outputs, a key output, a video loopthrough, some internal adjusters for fine-tuning, and a notch filter switch to quiet shaky edges. I have used it extensively in professional settings (including for a commercial that appeared on CNN, and on the Sony JumboTron during Super Bowl XXIII) with excellent results. Vectorscope tests prove the quality of SuperGen. If you want to meet more than the minimum requirements for clean signals in industrial and broadcast settings without spending big bucks, give this genlock a shot. SuperGen gets the "Best Value" award.

SuperGen-2000S
Digital Creations
$1595
Recommended Use: B, I
System: A2000 series
Signal: NTSC

The 2000S is a next-generation device—the first Amiga genlock to allow direct signal processing using a software-based multitasking control panel. The panel contains gadgets for adjusting a number of parameters: color saturation, chroma phase, horizontal position, vertical delay, and RGB termination, to name a few. If you are editing a video and find that your subject's face is purple, just double click on

the Settings icon to summon the video controls to Workbench. Select the chroma phase button and adjust the slider gadget to change the hue.

The 2000S fits into the A2000 video slot. In the rear of the unit are a network of BNC connectors and two sets of S-VHS In and Out connectors. A remote-control box with an S-VHS/Composite rocker switch is supplied for background and graphics dissolves. Waveform and vectorscope tests showed that chroma was right on, and burst and luminance were both good. The unit performed well in all phases of the edit session. The 2000S may change the way people think about video, not only in the Amiga community, but also industry wide. This S-VHS-ready studio-on-a-card gets the "Innovation" award.

Scanlock VSL-1
VidTech International
$995
Recommended Use: I, B
System: Any
Signal: NTSC, PAL

The Scanlock's simplicity is one of its strong features. Installation is a simple matter of plugging a cable into the Amiga's RGB port; an RGB loopthrough allows easy connection to your monitor. The Scanlock has one input and two output connectors with loopthrough for S-VHS, plus one Composite Video In and two Out with loopthrough, and a key output. On the front panel is a three-way power switch for Amiga, bypass, or external. There are other switches for NTSC or S-VHS mode, Composite Video Only, Amiga Video Only, Amiga and Composite, Fade In Amiga, Fade In Composite, Reverse Key, and more. You can also fine-tune the Scanlock internally.

In the edit suite, problems appeared directly on the monitor. I was especially puzzled by the degradation in video: Edges in the source video were ragged, but the Amiga video looked good. The vectorscope readings showed ringing, luminance readings were low, and sync and chroma were hot. Although the Scanlock's design is ideal for S-VHS edit suites, I cannot recommend it for broadcast applications. It might do well, however, in industrial applications. Scanlock gets the "S-VHS Ready" award.

In for Good

If you have felt locked out of video because of high prices, one of the new low-cost genlocks can solve your problem. If you had doubts about whether the Amiga could deliver a signal clean enough to function in a broadcast environment, it's just a matter of choosing one of the professional models that fit your facility. For industrial work, the choices are many. The commitment from heavy hitters like Magni, Neriki, Omicron, and others indicate that Amiga video will take off in the 1990s. And with innovations such as Digital Creations' software-based signal-processing panel, there seems to be no limit to how far we can go. ■

BUYING SMART

Say It With Style

Eight ways to get words—edgewise, diagonally, or vertically—into your videos.

By Gary Ludwick

AS RECENTLY AS ten years ago, the only way to get computer type on a screen was to scrounge up a teletype keyboard and a television set, and get to work with a copy of Don Lancaster's "TV Typewriter" article from *Popular Electronics*. Now there are a number of video-titling packages, each with its own distinctive ways of flashing, spinning, and sweeping text onto your Amiga screen. This assortment contains something for everybody, from the novice Amgia 500 owner to the video professional. Your choices are limited only by your bank account and requirements. *(See Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)*



In normal resolutions, edges appear jagged (top); Broadcast Titler's super hi-res mode (bottom) smooths them.

Low-Cost Entry

Leading off the entry-level group is one of the Amiga's first titling programs, **TV*Text** (Zuma Group, $99.95). While TV*Text lacks some of the bells and whistles common in newer programs, it is ideal for non-professional use. Offering six screen resolutions (from 640 × 200 to 704 × 480) and 10 built-in typefaces, it provides very good-looking screens, although the fonts and effects are somewhat dated.

In a full-blown review in the February, 1989 issue, I panned Easy Titler 1.0 for being simple to the point of near uselessness. With the release of **Easy Titler 2.0** (JMH Software, $49.95), I don't have a titling program to kick around anymore. Sporting a new graphics-oriented interface, Easy Titler 2.0 not only generates titles, but also provides 17 transition effects (wipes, scrolls, dissolves, and so on), making it a slide-show program as well. Other neat features include the ability to toggle high-resolution and interlacing on and off, a provision for changing the number of lines per page, and an easy-to-use script-editing (slide-show) facility that allows you to shuffle screens. Easy Titler even lets you import IFF hi-res pictures for use as backgrounds—a nice touch. JMH has made some impressive changes in Easy Titler, and 2.0 is a great deal for the money. ►

ADVANCED SOLUTIONS

An import from Israel, **Video Page** (Microshuki/Impulse, $199.95) does things a little differently. It comes with four font disks and begins with a unique font-loading screen that shows examples of each font on the disk in df1: in four sizes. From those 16 choices, you select four for loading into memory. There is no provision for importing other fonts or IFF background pictures, and no way to change resolution, which appears to be hi-res overscan (the documentation makes no mention of it). In Video Page, many functions are controllable via key combinations; a keyboard template or quick-reference card would be appreciated. Finally, Video Page can function as a slide-show operator, with (like Easy Titler) a choice of 17 transition effects.

Video Page's interface is well designed, with hi-res, 3-D buttons and gadgets. Likewise, the fonts (four typefaces, 64 variations in size and style) are nicely done, but several system crashes indicate there are some bugs to be ironed out. Coupled with its limitations in resolution choice and importing fonts and IFF screens, this keeps Video Page at the low end of the advanced group.

In the middle of the advanced pack is **Animation:Titler** (Hash Enterprises, $79.95), a solid performer. It works in most resolutions, imports IFF graphics, and works well with ColorFonts-standard characters and other fonts. Plus, it provides a slide-show mode with a half dozen standard scroll and wipe transitions, and displays Anim 3-5, Hash, and IFF animations.

Animation:Titler also offers flexibility in terms of borders, outlines, shadows—both cast and extruded—even special line or word backgrounds. And just in case animated titles are on your list, Animation:Titler is one of the few programs of its kind that can create and output Anim-compatible files. The program's only negative is its key-disk copy protection scheme, which requires you to boot with the

Of Features and Fonts

IF YOU'RE GETTING the itch to buy a video-titling program, chances are good that our overview didn't make the choice for you. It would be different if there were some real dogs in the group, but there aren't. You need some decision-making criteria.

Money is a great leveler for many of us, and the price spread of titlers should eliminate at least a few from consideration. Keep in mind that if you are not producing video presentations for broadcast or professional distribution—and I'm talking high-dollar video studio work here—you could wind up paying a big premium for capabilities beyond your needs. Broadcast Titler, Pro Video Gold, and even TV*Text Professional are loaded with features non-professionals might be able to use, but will not really benefit from.

Then there's memory. If you have less than a megabyte, your choices really get limited. Of our profiled eight, only TV*Text, Easy Titler, and Animation:Titler work with 512K of RAM.

Once past bucks, bytes, and bells and whistles, fonts are really the foundation of any titling program. A character generator without a wide variety of fonts might just as well be a word processor—a throwback to the TV Typewriter—and an inability to import ColorFonts-standard (up to 16 colors) or two-color Amiga fonts severely limits a program's usefulness. Sure, the publisher may offer additional font disks compatible with its particular titling program, but what happens if the company goes bankrupt, deserts the Amiga, or does not offer the font that fits your project? Whether you are putting titles on a homemade animation or designing the opening for a local television news show, you need access to the typefaces the job requires.

Worth particular note among ColorFonts packages is the Kara Fonts line from Kara Computer Graphics. These beautifully rendered 3-D fonts, in eight colors each, are just about mandatory for amateurs and professionals alike. Only Pro Video Gold, Easy Titler, and Video Page will not accept these or any other ColorFonts.

Prioritizing remaining features and benefits is a very individual matter. For some the ability to import IFF pictures is crucial. Others need a wide range of resolutions. Even copy protection can be a deciding feature. One thing I look for is a straightforward interface. With video-editing suites renting for $300 an hour and up in my area, I don't have time for finicky, esoteric modes of operation. I need a program that not only delivers high-quality video images, but is also easy to learn and use.





ChiselScript, Engraved, and Glass are three fonts available in the Kara Fonts lineup.

When you have your list down to two or three picks, take it to a dealer who will let you spend a little time using your video-titling candidates. You can't make a bad mistake with any of the programs profiled, but if you can settle on a great program and save money too, then your prioritizing and homework will have paid off. □ *—GL*

original floppy. (For an extra $10, however, you can get an unprotected disk.)

Video Titler's (Sparta/Oxxi, $149) claim to fame is its ability to alter fonts instantly. At the touch of a key, standard faces can take on a chiseled, embossed, or neon (thick or thin) appearance, or flash starburst highlights. There are up to 20 different effects for each font! Make no mistake, this is a powerful feature and one not seen in any other titler program to date.

Video Titler accepts all Amiga fonts as well as Zuma fonts (Zuma Group) and those created with Calligrapher (InterActive Softworks). Resolutions range from 320×200 to 768×480 overscan, and each can be used with interlace. You can import IFF graphics, invert them, mirror, and otherwise distort and change them. Even Extra_Halfbrite mode is supported.

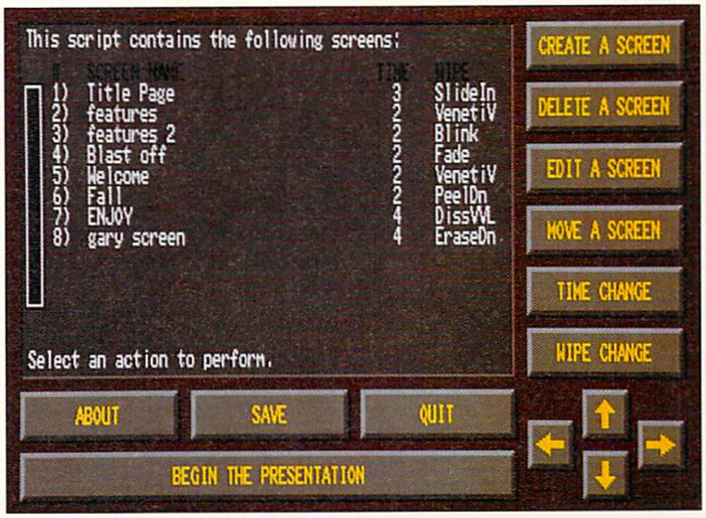
Finally, Video Titler's slide-show capability offers 12 transitions and allows Anim-format animations. Day in and day out, this is the one I reach for, and its placement in the advanced as opposed to the pro category is based more on price than performance. For most professional applications, Video Titler will deliver the goods.

Prose for Pros

Two of the three packages that bill themselves as professional back up that billing with their price tags. . .if not necessarily their performance.

From Zuma Group comes **TV*Text Professional** ($169.95). A wholly different product than TV*Text, TV*Text Professional is also different from other titling programs because of its extension into the graphics area. For instance, it allows you to generate backgrounds through wallpaper, dithering, and tile techniques. It also provides a full range of resolutions, ColorFonts, and IFF capabilities, lets you import objects (brushes) created in other programs, and lets you save screen sections as objects.

TV*Text has a unique Preferences section that provides great flexibility in designing and specifying such things as drop shadows, type borders, and outlines. Special rendering effects can give a new look—brushed gold, for instance—to standard fonts, and you can edit and change effects as your skills grow. These features are just the tip of a very powerful professional program.



A new generation generator: Easy Titler 2.0

Pro Video Gold (Shereff Systems, $299.95), an upgrade to Pro Video Plus from the former JDK Images, works in only one resolution (720×480) and takes little advantage of the Amiga in terms of interface. There are no gadgets, no graphics, no pull- ►

Quick Fix #2

The "Rub-On" Method

IN THE OLD days, before computerized character generators made their way into America's television control rooms, a video program's titles were created manually.

At first, the titles were painted by hand. Later, pressure-sensitive (rub-on) typefaces made the job somewhat easier. Either way, the procedure was the same. Each title was supplied on a black card with white type, usually one screenfull of type per card. The cards were then placed on a stand in front of the studio's titling camera. After the camera focused and framed the text, the title was electronically superimposed over the program's video.

Need some titles in a hurry and don't want to buy more software? Why not use the rub-on method, modified a bit for the computer age. Buy transfer sheets in the style you like from an art-supply store and digitize them. Once you have the typeface in the computer, use a paint program to cut and paste the letters to form the words of the title. It is easier to understand if you think of this as the digital equivalent of rub-on type.

I always use the Amiga's high-resolution mode (640×400) to capture the typeface. This way, it is easy to resize the type or to change its resolution without losing too much quality. Be sure to set the software to digitize in Black-and-White mode (16 shades of gray.) Next, set the software's contrast and brightness controls as high as you can without washing out the image.

Adjust the camera's position so that the letters are about ½-inch high on your monitor. This is big enough for most titling requirements, and you can reduce the size later without losing detail. If, after you capture an image, there is a lot of "noise" in your picture, try to adjust the lights to remove the hot spots. Your lighting must be as flat as possible to assure a clean image. If you continue to have problems, try reversing the image so that the letters are white on a black background; most digitizers have a "neg/pos" setting for this purpose. Keep in mind that this just hides the problem; the noise is still there, you just cannot see it as well.

To use your new font, simply load it into your paint program and cut and paste the letters to form the words. Just like rub-on type, but without the elbow grease!

—Gene Braun

down menus—even the mouse is useless with Pro Video Gold. You control the program via the function keys, both alone and shifted (thank goodness for the keyboard template). Pressing one of these keys summons a menu to the bottom of the screen; use the arrow keys to select functions. Pro Video Gold reminds me—in terms of working style—of the Chyron units in use at many TV stations. It's not pretty or fancy, but it does the job.

While Pro Video Gold can import IFF pictures for use as backgrounds, it is not compatible with ColorFonts. It does not allow fonts from other publishers, either, although the program comes with four fonts in various sizes and styles, and additional Pro Video Gold fonts are available separately. Transitions are allowed on a page-by-page and line-by-line basis. With 32 page and 60 line transitions, no other program comes close to Pro Video Gold's flexibility in this area. It also provides Auto programs such as those used on cable-access channels, whereby a program of pages and lines repeats over and over. Pro Video Gold is not the easiest program to use, and it is copy protected, but it deserves the pro designation.

What sets **Broadcast Titler** (InnoVision Technologies, $299.95) apart from all the others is a programming technique that yields an effective resolution of 2160 × 1440 (nine times sharper than standard Amiga high resolution), which virtually eliminates the dreaded "jaggies." The secret is in font design, as Broadcast Titler in all other respects works in normal hi-res mode. The program is completely compatible with ColorFonts and other Amiga fonts, and provides a utility for converting those characters to the Broadcast Titler standard. Converted fonts are not as sharp in resolution as resident fonts, but InnoVision plans to release an add-on utility capable of improving the resolution of imports.

Super hi-res is not Broadcast Titler's only strength. Its scrolls and transitions are extremely smooth—perhaps the best I have seen. It offers a variety of transitions, creates 3-D color font extrusions, supports color cycling, and offers a choice of up to 320 colors in high resolution. Broadcast Titler is also the only titling program that provides internal software control of Digital Creations' SuperGen genlocks. Even its copy protection is unique: The program asks for the key disk only one in every eight or so starts.

ROLL CREDITS

If you skipped to the end looking for firm recommendations, you missed some good reading. Even the least of these programs is pretty good and the best is outstanding. As many of the programs' technical details and capabilities are similar, your choice boils down mainly to dollars and needs. (See the sidebar "Of Features and Fonts" for help on deciding which is the right program for you.) It's a tribute to the Amiga's inherent abilities that there are so many good video-titling packages to choose from. ■

Gary Ludwick is president of The Creative Department, a Charlotte, NC-based advertising agency. The Amiga has been an essential part of his company's video, graphics, and presentation capabilities for the past three years. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Amiga Video-Titling Programs At A Glance

PROGRAM	PRICE	MINIMUM MEMORY	SUPPORTS COLORFONTS?	# OF FONTS SUPPLIED	COPY-PROTECTED?	RESOLUTIONS SUPPORTED*	IFF COMPATIBLE?	TRANSITIONS? (# POSSIBLE)
Easy Titler 2.0	$ 49.95	512K	No	7	No	L,H,I,O	Yes	Yes (17)
TV*Text	$ 99.95	512K	Yes	4	No	M,H,I	No	No
Video Page	$199.95	1MB	No	2	No	H	No	Yes (17)
Animation:Titler	$ 79.95	512K	Yes	6	Yes	L,M,H,I	Yes	Yes (6)
Video Titler	$149.00	1MB	Yes	5+	No	L,M,H,O	Yes	Yes (12)
TV*Text Pro	$169.95	1MB	Yes	9	No	L,H,I,O	Yes	No
Pro Video Gold	$299.95	1MB	No	4	Yes	H	Yes	Yes (92)
Broadcast Titler	$299.95	1.5MB	Yes	4	Yes	H,O,S	Yes	Yes (70+)

* Resolutions: L—Low; M—Medium; H—High; I—Interlace; O—Overscan; S—Super Hi-Res

AMIGA WORLD

STEP INTO THE WORLD OF AMIGA . . .



The Pathway To Your Imagination

For a computer as extraordinary as the Amiga™, you need a magazine that can match its excellence, AmigaWorld.

AmigaWorld is the only magazine which provides you with ideas and information to get maximum performance from the Amiga's tremendous power and versatility.

Each issue gives you valuable insights to boost your productivity and enhance your creativity.

Whether you choose the Amiga as a serious business tool for its speed and multitasking capabilities. . .or for its superb graphics, drawing, color (over 4,000 colors), and animation. . .or for its state-of-the-art music and speech. . .or for its scientific and CAD abilities, AmigaWorld can help you achieve superior results.

With its timely news features, product announcements and reviews, useful operating tips and stunning graphics, AmigaWorld is as dynamic as the market it covers.

Don't wait! Become a subscriber and save nearly 37% off the cover price. Return the coupon, or for immediate service, call toll-free 1-800-258-5473. In U.S.A.

Save 37% ☐ *YES!*

I want to discover the full potential of this powerful machine. And save 37% off the cover price. Enter my one year subscription to *AmigaWorld* for the low price of $29.97. If I'm not satisfied at any time, I will receive a full refund—no questions asked.

☐ Payment Enclosed ☐ Bill Me

Name ______________________

Address ______________________

City ______________________

State ______________ Zip __________

Canada & Mexico $38.97, Foreign Surface $49.97, Foreign Airmail $84.97 (U.S. Funds drawn on U.S. Bank). Prepayment is required on foreign orders. All rates are 1 year only. Please allow 6–8 weeks for delivery.

AmigaWorld 4WAB8
PO Box 58804, Boulder, CO 80322-8804

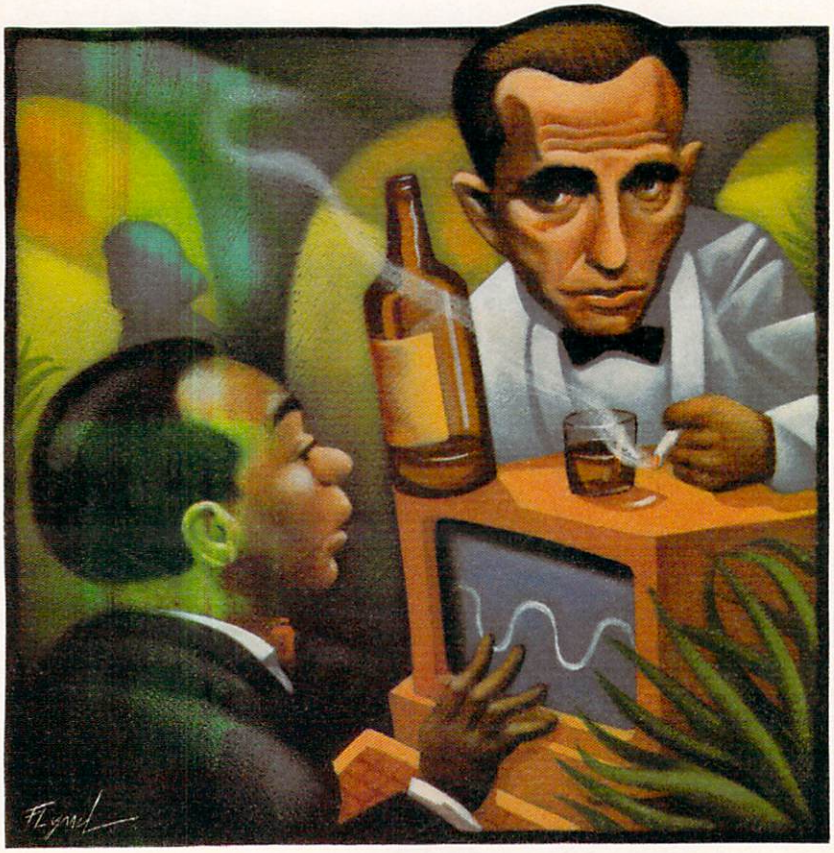
Play It Together, Sam!

Synchronizing Amiga sound and video.

By Dean Friedman

SUPPOSE THE PLAINTIVE strains of "As Time Goes By" didn't mesh with the smoothly gliding fingers on Sam's keyboard. Bogey's boozy brooding would be pretty unconvincing, and Warner Communications would be many millions poorer today. But Hollywood knew its stuff when it came to synchronizing sounds and pictures—even back in 1943.

Alas, the union of sound and video has not always been so sweet or smooth for Amiga users. Recent software, however, has made significant headway in providing synchronization of these two essential components of a good video production. We will take a long look, and lend a sharp ear, to six programs that can help you get the job done. In addition, I'll share a few tips and techniques that should help you add sound and music more effectively to your Amiga video creations.



At least a half dozen programs can trigger audio via video and vice versa: The Director (Right Answers Group), Lights! Camera! Action! (Oxxi), MovieSetter (Gold Disk), Photon Video: Cel Animator (Micro-Illusions), Animation:SoundTrack (Hash Enterprises), and DeluxeVideo III (Electronic Arts). Not all of them work the same way, though, and some allow sound sources that others do not.

The IFF 8SVX file format, which is supported by most Amiga audio software, is common ground for all six. A host of sound-digitizing packages can generate such samples, and you can edit these files using the digitizers' own software or with a dedicated sample editor. Animation:Soundtrack incorporates digitizing and editing software that you can use with any commercial digitizer.

Here's Looking at SMUS

In addition to letting you trigger IFF samples, both Lights! Camera! Action! and DeluxeVideo III can play entire music scores written in SMUS (pronounced "smooze") format. SMUS (Sonix Music Utility System), now a standard Amiga sound format, derives from the Sonix (Oxxi) music-sequencing program and is supported by many others. A SMUS file contains eight tracks of note events that trigger IFF samples as instruments, providing a polyphonic (multi-channel) musical soundtrack for your video. Only four samples can play simultaneously on the Amiga, however, because the computer has just four digital audio channels.

To reach beyond the Amiga's sampling voices and employ the sound-making power of synthesizers and samplers, you need a small piece of hardware: a MIDI ►

ILLUSTRATED BY FRED LYNCH



Coming To A Screen Near You.

If you're ready to become your own studio producer, there's only one desktop video system that will bring NTSC and S-VHS to your Amiga's screen. The Scanlock system by VidTech. Other systems give you a genlock that's "either-or." They either support NTSC or S-VHS. But not both.

Two For One

With Scanlock, you get two genlocks for the price of one. So you can migrate from NTSC to the newer S-VHS format without investing in another system. We also offer a Scanlock model that is compatible with the International PAL TV format, including its new S-VHS version.

Scanlock's dual-genlock system gives you broadcast-quality video at consumer prices. And our system offers all the bells and whistles, including front-panel fingertip controls, multiple monitor connections for viewing and editing, and independent fade controls for both reference and Amiga videos. If your Amiga is supporting a load of peripherals, we provide a connection that lets you use an optional external power supply.

Scanlock is a breeze to use. A "glitch-free" vertical interval switch lets you insert, reverse and remove reference video and Amiga graphics at the touch of a finger. And you can switch between NTSC, S-VHS and analog RGB formats without moving cable connectors. When you're done editing, you can resume normal Amiga operation with the flip of a switch.

Don't Get Locked Out

So if you're ready to become your own producer, choose the desktop video system that doesn't lock you into one genlock — the Scanlock system by VidTech. Coming to a screen near you.

Call or write us today: VidTech International, Inc., 2822 NW 79th Ave., Miami, Florida 33122. Telephone 800-727-2261 or 305-477-2228. Fax 305-591-1651. Prices:NTSC-$995, PAL-$1,095. Distributed by Southern Technologies, Dallas, Texas.

VidTech

Circle 418 on Reader Service card.

(Musical Instrument Digital Interface) interface. MIDI is a standard through which all synthesizers and music-sequencing software can converse. Because SMUS tracks represent eight channels of MIDI information, DeluxeVideo III can trigger up to eight dedicated synthesizers or samplers through the interface via a SMUS file.

Also through the SMUS format, you can start nonstandard synthesized sounds (as opposed to standard IFF 8SVX samples). Generated in real time using algorithms, such sounds bypass the DMA (Direct Memory Access) portion of the Amiga's sound-generating chips, thereby conserving chip memory. One program, Lights! Camera! Action!, can play these sounds alternately.

Keep in mind that a sample does not have to be just one note; it can be a fully orchestrated 10-second sequence consisting of many instruments and hundreds of notes. Therefore, you can achieve virtually the same effect using one long sample as you can triggering a SMUS sequence. The main difference between sample and sequence is the relative demand on memory: a SMUS score, because it reuses sampled material, is more memory efficient. Whether ►

Memory Matters

THE PROGRAMS UNDER consideration fall into two main categories. The Director and Lights! Camera! Action! are script based, meaning that you operate them by entering commands via a scripted language similar to BASIC. The remaining packages are controllable via gadgets and menus.

Regardless of interface, the strategy for synchronizing sound to video is the same for all these packages. You program or load a slide show or animation (Anim or RIFF format) into the program, decide where you want the sounds to occur, and then enter commands to trigger the sound at the selected frame numbers.

Unfortunately, the process is not necessarily as easy as you might think. The Amiga uses a set of dedicated chips to perform the bulk of its graphics and audio tasks and to free up the main processor for governing the rest of the system. Because these chips are also responsible for such chores as displaying the Workbench screen, there is never more than 300 or 400K of chip memory available at a time. To accommodate memory-intensive audio and video (a 20-second animation can eat up a meg or two), the Amiga employs a system of buffering whereby data is loaded from disk either into fast RAM and then into chip RAM, or directly into chip RAM. To provide a continuous display, the animation is output from one section of chip memory as new data is loaded into another portion.

Script-based packages require that before you give a command to play a sampled sound or SMUS score, you load it into the chip memory's buffer. Because the act of accessing data from a disk drive can slow down an animation or sample, you must consider the complexity of both elements. Your goal is to schedule the loading of sound data during portions of an animation or slide show in which very little is going on, and thus avoid interrupting the flow of the presentation.

In MovieSetter, Cel Animator, Animation:SoundTrack and DeluxeVideo III, this system of buffering and memory management is transparent; the program does it for you automatically. Even so, it's important to be aware of these limitations so you can plan the sizes of your animation and audio segments accordingly. While these packages can typically manage 20 seconds of animation and 10 seconds of 8K-sampled audio before flashing "Low On Memory" messages, it is difficult to estimate chip capacity because the amount of memory graphics, animations, and sound samples consume varies greatly according to complexity, resolution, and length. By employing very careful memory management, you can run a simple lo-res, non-overscan slide show with recurring audio samples for half an hour or more.

Here are some rule of thumb for conserving memory:

- Use lower resolutions, and fewer colors, and avoid overscan. The worst culprits for stealing memory are high resolutions, many colors, and overscan mode.

- Use short sound samples digitized at low (5 to 8K) rates.

- Get variety from a single sample. By drastically altering the playback speed, you can get two or three sounds for the price (in memory) of one.

There are a couple of options that can save you from having to manage memory so strictly. By adding Commodore's new Fat Agnus chip to your system, you can increase chip memory to one meg, and chop your memory-management concerns in half. I recommend this replacement for serious audio and videophiles.

A solution that holds even more promise for our application is the ability to transfer both audio and video data from a hard drive to chip RAM in real time. This effectively blows the lid off memory restraints, and frees you from having to work with short segments of video and audio.

At the last New York AMI-EXPO, Xetec fascinated visitors by playing continuous animations simultaneously with a single one-hour stereo audio sample, directly from a hard drive in real time. The demonstration system consisted of Xetec's FastCard SCSI interface driving a Micropolis 1674-7 150-meg hard drive on a stock one-megabyte A2000. A pair of custom player modules helped show off the drive and controller speed.

Now that hardware maunufacturers have demonstrated an ability to operate at the necessary speeds, it's up to software developers to provide buffering schemes that can address this capacity. □ *—DF*

At last, a scanner with an artist's touch.



With the Migraph Hand Scanner and Touch-Up™ you can now produce professional-quality high-resolution scanned graphics from start to finish—without changing programs.

This unbeatable hardware-software team lets you scan, edit, and enhance images until they're exactly right for all your desktop publishing projects.

Start with quality hardware.

The Hand Scanner has all the features you need: A scanning window over 4" wide. Four scanning resolutions—100, 200, true 300, and true 400 dots per inch. Adjustable contrast. Three dither settings for scanning photographs. Plus a special setting for line art.



You can build your own library of images from logos, photographs, books, and illustrations. And that's just for starters.

Finish with software that won't quit.

With Touch-Up, Migraph's complete design tool for high-resolution monochrome images, you can put the finishing touches on every image you scan. Its powerful editing functions include standard commands plus extras like rotate by degree, slant, stretch, outline, and bolding. A complete paint program. A full array of drawing tools. Not to mention special effects and scalable outline fonts. When your images are pixel-perfect, you can import them into your favorite Amiga publishing programs like Professional Page™ and Page Stream™. A variety of load/save formats also lets you use images on the PC, Mac, and ST.

Last but not least: The Migraph Hand Scanner and Touch-Up are easy to learn and easy to use.

See you dealer today for more details or call Migraph toll-free.

The Migraph Hand Scanner and Touch-Up. Powerful tools for professional publishing.

For Amiga 500, 1000 and 2000 systems with 1MB memory. A hard disk is recommended.

MIGRAPH INC.

Migraph, Inc. 200 S. 333rd, Suite 220 Federal Way, WA 98003 (800) 223-3729 (10 to 5 PST) (206) 838-4677

Circle 443 on Reader Service card.

or not they support SMUS format, memory management is a primary concern for all of these programs (see the sidebar "Memory Matters" for a discussion of audio-video memory demands and some tips on how to conserve valuable memory).

Six Ways to Whistle

To help you determine which of these programs best suits your needs, I will outline the major features of each. Except for Animation:SoundTrack, they focus primarily on editing, displaying, and manipulating video and animations, with audio abilities generally treated as added features.

THE DIRECTOR

The Director is a good, reliable display program that supports all resolutions of IFF images and Anims and can send audio samples through all four Amiga channels. It lets you attach sound to individual frames, and using its EXECUTE command, you can trigger AmigaDOS commands from within the script. Thus, even though The Director does not support SMUS scores or sequences directly, it can control music-sequencing software. The Director is purely script based, but its commands are logical and straightforward. BASIC programmers will be perfectly comfortable with The Director, and even non-programmers will not find it difficult to learn.

LIGHTS! CAMERA! ACTION!

While Lights! Camera! Action! is also script based, it alleviates some of the drudgery inherent in this approach by providing requesters to help you organize the flow of commands and effects. These requesters require both mouse and text input, and though they still force you to think in script-programming terms, they provide a relief from pure script. The program offers a variety of snazzy effects and wipes, and like The Director, it supports all graphics resolutions and provides tremendous control over video and audio.

In addition to letting you trigger individual IFF sound samples on all four channels, Lights! Camera! Action! supports SMUS scores directly. It can also play Sonix files, which makes it unique among these packages. Because Lights! Camera! Action! uses Sonix

AMIGA HERO

Getting into the Game

IF YOU'RE OVER 21, you probably haven't heard of *Total Panic*. Our hearty crew of younger readers, however, are apt to be familiar with the weekly Nickelodeon show in which participants get smeared with slime, gunk, and goop.

That's only part of the fun. A new addition to the Total Panic lineup is perhaps the most interactive video game ever created. It's called Eat a Bug, and it's the creation of Dean Friedman.

Total Panic has long been linked to the world of computers. In addition to celebrity guests, movie reviews, and of course, slime, the show includes video-game reviews. Eat a Bug takes this a step further and puts the kid right in the center of the game. The game made its nationwide television debut last August.

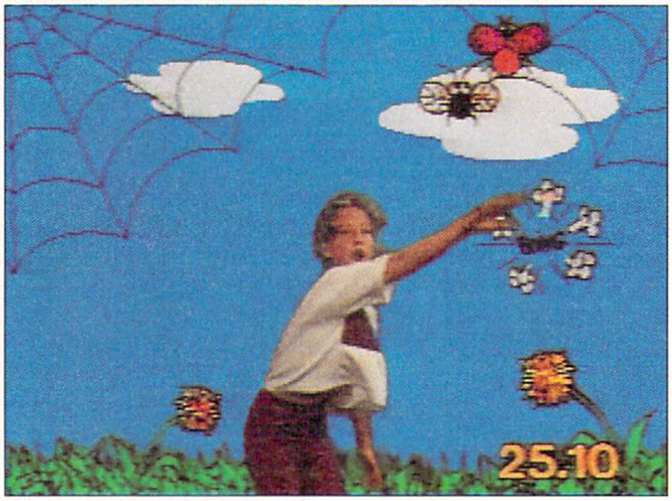
Friedman hatched Eat a Bug after seeing what the Amiga, coupled with the Mandala interactive system, was capable of doing. Dean talked to a Nickelodeon official, got some interest, and then went off to New York University to learn Mandala and prepare a demo. Nickelodeon representatives were more than impressed. "It blew them away," Friedman said.

More important was the reaction of the kids, who were also more than impressed. "They freaked out. They loved it," noted the relieved and happy Friedman.

The game is quite a bit more simple than the technology needed to produce it. The object is to hit the bugs that buzz across the screen, while avoiding the spiders and caterpillars. The player stands in front of a large green backcloth with a camera pointing at him. That image is sent into the Amiga and Mandala for collision detection. The output is transferred to a Neriki Genlock used as an encoder to a video switcher where the images are combined.

The result of this fancy computer footwork? The kid sees a true mirror image of himself, playing the game, on a TV monitor.

Friedman uses two inexpensive Amigas (an A1000 and an A500). Although technically one Amiga could handle it all, Friedman uses an Amiga A1000 for the graphics, and the A500 for sound. The A1000 sends MIDI note messages to the A500, which is running Music X. These messages trigger samples for the sound effects and soundtrack. This way, when a kid hits a bug, the A500 makes a beep. The soundtracks are two long samples created with the A.M.A.S. digitizer and AudioMaster II.



Lori, a *Total Panic* contestant, smashes Amiga bugs.

Not many of us are able to produce innovative new segments for national television, but if you happen to be one of the few considering a similar project, Friedman has one key piece of advice: Find a genlock that will take an external sync. "No one will let you drive $3-million-worth of equipment with an Amiga," Friedman said. In fact, the engineers just laughed when he suggested it.

After a few more Friedman projects, we're sure no one will be laughing.

—Doug Barney and Linda Barrett

Toward State of the Art

ALTHOUGH THE SMUS format provides a means of accessing MIDI sequences, it falls short of realizing MIDI's full potential.

The MIDI standard can transmit not only note-on and -off commands, but also a variety of continuously changing performance values such as pitch bend, modulation wheel moves, key velocity, aftertouch, volume pedal change, and program (patch) change commands. Of these values, the SMUS format can interpret only note ons and offs. And while MIDI can handle up to 16 channels simultaneously, SMUS accommodates just eight at a time.

MIDI sequencing is a technological breakthrough that has literally changed the course of modern recording. Only when we can tap its power fully will we realize truly dynamic and expressive audio on the Amiga. With PageFlipper Plus F/X 2.0, Mindware International intends to grant further access to MIDI. An update to the original PageFlipper Plus F/X, a script-based animation display and editing tool, 2.0 promises not only to support IFF samples and SMUS scores, but to incorporate a MIDI event module. This module will allow you to trigger any MIDI event: a note, a program change message, or a series of continuous controller events such as those used in a pitch bend wheel. One way a MIDI note event could help you is by triggering an external sequencer. (You can accomplish this using the SMUS format as well.) Also, you could run sequencing software through a second Amiga by connecting the computers with a MIDI cable. (You cannot yet do this within a single machine because current Amiga sequencers can receive MIDI data only from the external MIDI port.) MicroIllusions' Music X is one sequencer perfectly suited to this task. You can design a Music X filter page to trigger a given sequence once it receives a specific MIDI note number. The same effect could be achieved by sending a MIDI start command.

Another solution might come with the continued acceptance of ARexx, a protocol through which various software packages (regardless of their application) can communicate. With the help of ARexx, you can set off any number of events from within one program. From your video program, for instance, you could send an ARexx message to start a sequence on a MIDI sequencer.

Whether via MIDI or ARexx, the future of audio and video synchronization on the Amiga lies in the ability of software to take advantage of high-end music sequencers. □ *—DF*

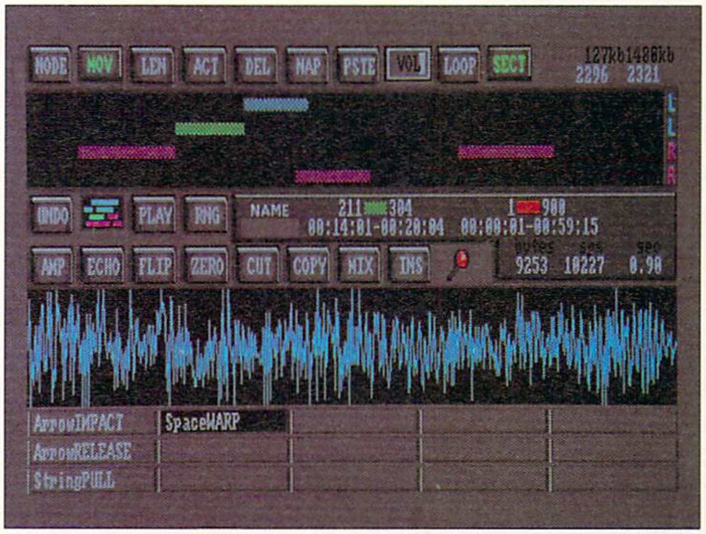
player source code, it can output sound synthesized by the main processor in real time. Sonix files, which you can create only with the Sonix program, are synthesized according to algorithms, and thus tend to sound one-dimensional and static. They do not sound as good as sampled instruments nor are they suitable for dialog, but they also do not have the memory limitations of ordinary sampled sounds.

Photon Video: Cel Animator

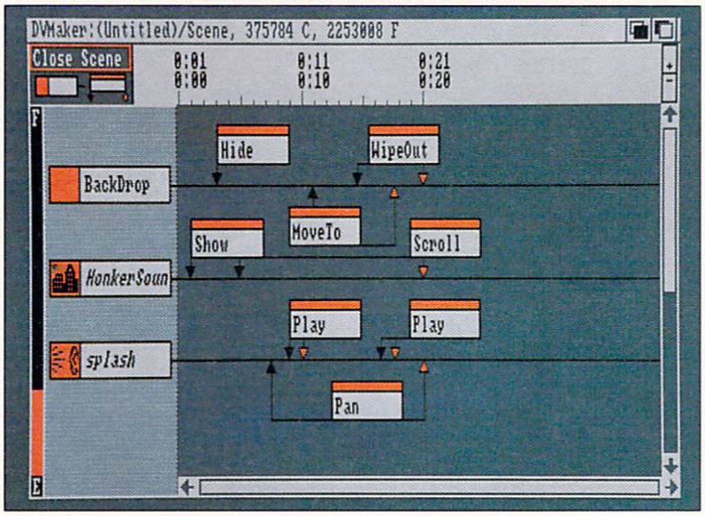
Cel Animator's main function is to allow you to quickly pencil test animation sequences before you commit to full renderings. The program is menu driven and provides for flexible interaction with animation and sound while you edit. It allows you to analyze a segment of animation frame by frame, to tag each frame with fragments of dialog or effects, and then to print out an exposure sheet—a standard form animators use to list the pertinent details of a scene, including the frame location of phonemes and effects. Cel Animator lets you attach a single audio sample to a start frame and automatically divides and assigns the segments of the sample to subsequent frames. This means that when you repeat a frame, the corresponding sound segment repeats as well. The program provides for very precise control over synchronizing sound to video, but while the other packages make use of the Amiga's ability to play four samples simultaneously, Cel Animator can handle only one sample at a time. Also, it is the only one of these packages that does not let you control pitch, octave, volume, and channel assignment.

MovieSetter

MovieSetter is an extremely powerful animation editor and display package with an integrated paint program. It is fun to use and it handles animation construction simply and fluidly. The program treats sound as single events attached to individual frames. Assigning an IFF sound sample is a simple matter of clicking the right mouse button a few times. MovieSetter lets you control stereo panning, that is, ►



Animation:Soundtrack offers powerful audio-editing tools.



DeluxeVideo III's logical interface makes it a joy to use.

the relative volume mix between the left and right channels. Its interface is graphics oriented and icon driven, and its only real drawback is that it supports low resolution to the exclusion of all others.

ANIMATION:SOUNDTRACK

Unlike the others, Animation:SoundTrack has no animation-editing abilities, but provides a complete set of extremely powerful audio-editing tools, including flip (reverse), copy, mix, insert, cut, and echo. The program's sound-digitizing module can generate samples by driving any commercial Amiga sampling hardware. SoundTrack can play completed animation segments in all graphics resolutions including HAM and overscan.

Of all these packages, Animation:SoundTrack employs the best graphic interface for synchronizing sound and video. You can store up to 15 audio samples, each of which (or portions thereof) can be defined as nodes. Time in each of the Amiga's four audio channels is represented by a track, upon which you can place the rectangular nodes. You can duplicate or resize the nodes. Attaching a sound to a frame of video is as easy as clicking and dragging on a node with the mouse. A SMPTE (industry standard time code) frame counter displays the location of your current node for absolute frame accuracy.

Animation:SoundTrack does not support the SMUS format, but because it provides such an easy means for editing multiple samples while viewing your animation, it is a strong contender for being the audio-synchronizing package of choice.

DELUXEVIDEO III

All around, the most powerful of these programs is DeluxeVideo III. Its extremely logical graphics-ori-

QUICK FIX #3

Endlessly Looping. . .Looping. . .Looping. . .

HOLLYWOOD COMES TO the rescue again, this time with a technique called looping. Simply, dialogue looping is the process of rerecording the actor's lines in a studio after the fact. The actor watches a playback of the film or tape shot earlier and tries to repeat the lines in sync with the original while an editor records the new dialogue on audiotape. The two pieces are then reunited later, during editing.

Looping is normally done in a special studio designed for the process, but you can easily do it at home. You can use your Amiga to create an animation, and then add a voice-over or dialogue for your character. Or you could create custom sound effects that are perfectly in sync with the computerized action. Here's how you do it.

THE SETUP

You will need an audio digitizer and two Amigas (or one Amiga and a VCR). First, set up one of your Amigas with the animation playing in an endless loop. If the animation is not designed to loop, simply take the first two frames of your animation and add them to the end, after the last frame. Many Anim programs can do this automatically. Any Anim player, such as the public-domain program PlayAnim, will then be able to play this back as an endlessly looping animation.

If you do not have two Amigas, you can use a home VCR in place of the second machine. Simply record your animation 10 or 15 times in succession on videotape. Then, play this back on the VCR to simulate the Anim's endless loop.

Connect your digitizer to the other Amiga and run the sampling software. I use AudioMaster II (Oxxi, $99.95), but almost any Amiga audio digitizing software will do. Allocate as much memory to the digitizer as possible, because you will be recording an extremely long sample.

Of course, you will need a microphone of some sort in order to record your actor's dialogue. The most important thing is to get the best sound quality possible. You don't want so much echo that your actor sounds like he's in an empty room, especially if the animated character is strolling outside. I have found that microphones that clip to a collar or hang on a short cord around the subject's neck work best. Regardless of the style, do not let the actor hold it; place a floor or table stand as close as possible to him instead. Keep the microphone below his chin and somewhat away from his mouth, so that he will not breathe into it or pop his p's.

RECORDING SESSION

Now you are ready to record the dialogue. Set the monitor that will display the animation so the actor can see it clearly. Begin the animation looping on the first machine and let the star rehearse a little. Once he syncronizes what he is saying with what he sees on screen, begin your audio digitizing. Record as much as you can in one sample. The results are much better if the speaker does not have to stop and start each time. When you are satisfied with the results, you can review the samples the same way in which they were recorded: Play the animation on one machine and the audio on the other. Pick the best samples and save them as separate files. To "marry" (another film-world buzzword) the video and audio tracks, you will need a program with sound synchronization tools. I recommend DeluxeVideo III (Electronic Arts, $129.95) or Photon Cel Animator (MicroIllusions, $149.95).

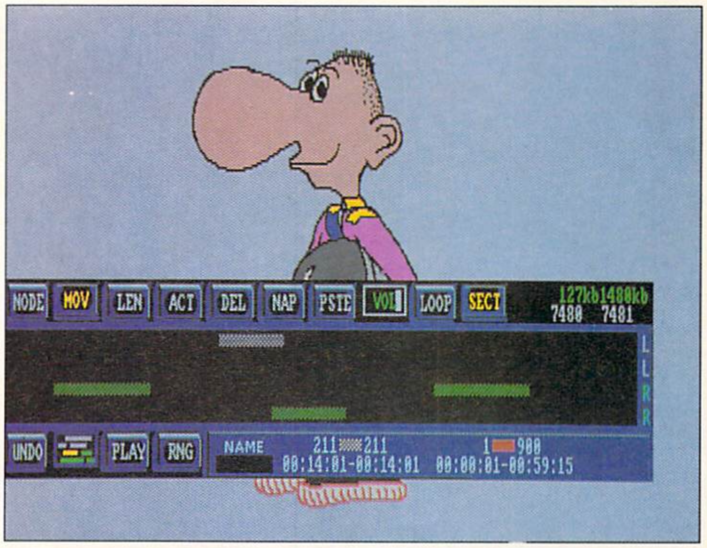
—Gene Brawn

ented interface makes it a joy to work with. Videos are depicted graphically as time lines, to which you can attach Effects and Scenes modules by clicking and dragging the mouse. A double click opens a requester containing a host of easy-to-understand menu options.

Sound is represented either as an Audio or Tune Track. An Audio track triggers IFF samples within a Scene. You can define a variety of parameters for your sample, such as frequency, number of repeats, stereo pan, and volume. A Tune track can play a SMUS score at any point, and lets you control such features as tempo, volume, number of repeats, and stereo pan.

In addition, DeluxeVideo III can output MIDI note information derived from SMUS scores to external synthesizers or samplers, yielding real-time synchronization to high-end musical instruments.

Whether in the form of dialogue, special effects, or music, the role of sound is critical in video presentations. The Amiga, with its polyphonic digital audio, broadcast-quality video, and multitasking abilities, is ideally suited to integrating sound and video. While software that allows linking of these components has been slow in coming, these programs are evidence that the issue is no longer being neglected. The fact that these two media can work cooperatively in a single Amiga makes us Saturday morning cartoon fans starry eyed. After all, what's a pie in the face without the SPLATT? What's an interplanetary attack without the WHOOOSH, ZINGGG, and KABOOOM? Without sound effects and some majestic music, even a full-scale alien invasion would seem dull! ■



Sync samples (rectangular nodes) with frames in SoundTrack.

BUYING SMART

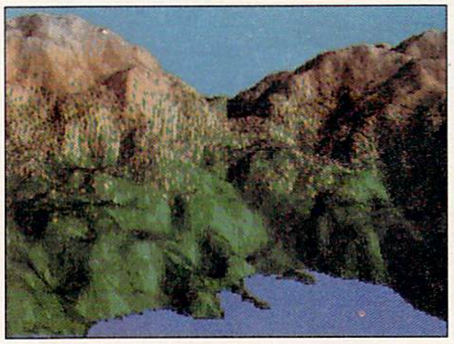
Something for Nothing:

Video/Graphics Software in the Public Domain

You don't need the budget of a Hollywood studio to outfit your Amiga workstation with top-notch software.

By Graham Kinsey

IF YOU'RE LOOKING for the best tools to produce high-quality video and graphics work on the Amiga, don't overlook the *other* realm of Amiga software: the public domain. Many PD programs rival the quality of their commercial counterparts, and they are virtually free.



Scenery generates natural landscapes.

Some public-domain programs duplicate features found in commercial software packages, but there are also many that offer features that you just can't obtain in the commercial arena at any price. Listed below are some of the most valuable tools that Amiga video and graphics professionals could wish for.

For each program, I give the author's name, if known, and a PeopleLink's AmigaZone file number or Fred Fish series disk number so you can find it. Some of these programs are "shareware" (a public-domain program in return for which the author requests a small donation); for these, I have listed the suggested donation, if the author has given one.

Scenery

Brett Casebolt

Fred Fish disk #155

Scenery can be a lifesaver if you aren't artistically gifted, but need to create a natural landscape for a background and can't find suitable surroundings or pictures to digitize. Scenery not only creates mountain scenes complete with vegetation, but also gives you control over many variables in the scene, including the view angle, mountain height, and direction of the light source. Because Scenery is a fractal-generating program, landscape created near the front of the image can look too triangular, although keeping the water level of lakes and rivers high can help to reduce this. Also, if you're not pleased with the results, simply start over; Scenery takes only a couple of minutes to generate a picture. Unfortunately, there's no way to save a work in progress so you can fine-tune it later. Once you've saved it to an IFF file



ScreenX saves images from any program as an IFF file.

and quit the program, you have to use a paint program for further modifications. Despite these shortcomings, Scenery can be a big help when you need a realistic backdrop. ►

InterComputing, Inc.

2100 N. Hwy 360, Suite 2101
Grand Prairie, TX 75050-1015

In business since 1984
Amiga support since 1985

We are a service oriented business offering discount prices

FAX: 1-214-660-3695

Customer Service & Order Status: 1-214-988-3500

COMPLETE PRODUCT LISTING AVAILABLE

Order line: 1-800-622-9177

In Germany call; In Deutschland erreichen Sie uns unter **0202/755239**

CUSTOM A2000 PERIPHERALS

2nd Disk Drive	99.00
2MB Memory	349.00
4MB Memory	529.00
6MB Memory	699.00
8MB Memory	899.00
Multisync Monitor	540.00
RGB Analog Monitor	280.00
40MB Hardcard	690.00
80MB Hardcard	999.00
Internal Modem	110.00
Flicker Fixer	459.00

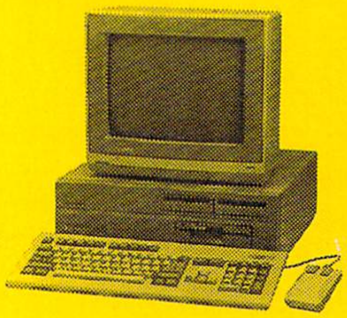
Create your own . . .

AMIGA 2000 CUSTOM PACKAGE

Purchase an Amiga 2000 with

Kickstart 1.3 — Fat Agnus Chip
1MB RAM — 6 Month Warranty

Add any of these specially-priced peripherals & we will include
Free Installation **1399.00**



Prices pertain to purchase of Amiga 2000 computer and peripheral.
Amiga is a registered trademark of Commodore-Amiga, Inc.

MEMORY

• M501 A500	99.95
• Starboard 1MB	379.95
• Starboard 2MB	499.95
• 2MB A2000	379.95
• 4MB A2000	579.95
• 6MB A2000	749.95
• 8MB A2000	949.95

DISK DRIVES

• Master 3A	139.95
• Air Drive	139.95
• Cal. Access	139.95
• FDATA-10	119.95
• FDATA-20	249.95
• Unidrive	124.95

HARD DRIVES

EXTERNAL	A500	A1000
20 MB	479.95	549.95
30 MB	599.95	649.95
45 MB	699.95	769.95
60 MB	849.95	899.95
80 MB	979.95	999.95

INTERNAL

Hard Card 20 MB	549.95
Hard Card 32 MB	599.95
Hard Card 40MB	699.95
Hard Card 80MB	999.95
Hard Card 105MB	1099.95

2 MB MEMORY CARD
(For use with A500 & Hard Drive)
299.95

VIDEO/GRAPHICS

Animagic	69.95
Animate 3D	99.95
Artistic Expressions I	39.95
Artistic Expressions II	39.95
Broadcast Titler	199.95
Caligari Consumer	199.95
Calligrapher 1.05	87.95
Comic Setter	66.95
Deluxe Paint 3.0	109.95
Design 3D	69.95
DigiPaint 3.0	69.95
DigiWorks 3D	89.95
Director	44.95
Fantavision	39.95
Fine Print	32.95
Forms in Flight II	77.95
IMG-Scan	109.95
Innvision	169.95
Intro Cad 2.0	49.95
Kara Fonts	52.95
Kurta 12 X 17 Graphics Tablet	599.95
Magni Genlock with remote 4004 or 4004S	1799.95
Movie Setter	69.95
Newsletter Fonts	29.95
Pageflipper Plus FX	99.95
Pagerender 3D	109.95
Pagestream	139.95
Pagestream Fonts #1-13 each	29.95
Panasonic 1500 camera	329.95
Pen Pal	109.95
Photon Paint 2.0	99.95
Pro Board	379.95
Pro Net	379.95
Pro Video Gold	199.95
Professional Draw	139.95
Professional Page	249.95
Sculpt 3D	69.95
Sculpt 4D	399.95
Shakespeare	149.95
Studio Fonts	29.95
Supergen 2000	1499.95
TV Show NTSC/PAL	62.95
TexEd Plus	54.95
Turbo Print	32.95
Turbo Silver	129.95
Window Print II	22.95
Zoetrope	99.95

MUSIC

Audiomaster II	69.95
Dr. T's KCS 1.6	166.95
Dr. T's KCS Level II	229.95
Dr. T's MT-32 Lib.	99.95
Dr. T's MIDI Recording Studio	44.95
M	154.95
Master Tracks Pro	269.95
Music Mouse	49.95
Music-X	199.95
Soundscape Pro MIDI Studio	124.95
Texture II	169.95
VoRecOne	129.95

MORE SOFTWARE

A-Talk III	67.95
A/C Basic Compiler	129.95
A/C Fortran (AB Soft)	179.95
Analyze 2.0	62.95
Arexx	32.95
Aztec C Developer	219.95
Aztec C Professional	159.95
Aztec Source Level Debugger	59.95
BAD	32.95
BBS-PC	99.95
Benchmark Amiga Lib.	64.95
Benchmark C Library	64.95
Benchmark IFF Library	64.95
Benchmark Modula-2	134.95
CLI Mate	27.95
Critic's Choice	159.95
Cygnus Ed. Professional	69.95
DOS-2-DOS	42.95
Demonstrator	24.95
Disk Mechanic	56.95
EZ-Backup	32.95
Encore	44.95
Excellence	189.95
Facc II	22.95
Flow	59.95
GFA Basic 3.0	99.95
Lattice C 5.0	219.95
Lattice C ++	395.95
Lint	69.95
Maxi Plan 500	99.95
Maxi Plan Plus	129.95
Microfiche Filer Plus	112.95
Money Mentor 2.0	59.95
Online Platinum	69.95
Power Windows 2.5	56.95
Project D	32.95
Prowrite 2.5	72.95
Quarterback	44.95
Scribble Platinum	99.95
Super Base Pro. 3.0	209.95
Superplan	109.95
The Works-Platinum Ed.	169.95
Trumpcard A500	249.95

MORE HARDWARE

68882 Math-Coprocessor 25Mhz	349.95
A500 Replacement Power Supply	99.95
Amtrac Trackball	69.95
GVP 68030/68882	1199.95
GVP 68030 Card	849.95
GVP 68030/68882 4MB	2599.95
GVP 68030/68882 4MB/40MB Drive	2999.95
GVP 68030/68882 4MB/80MB Drive	3499.95
Spirit Inboard A500 1.5MB	349.95
Spirit Inboard A1000 1.5MB	349.95
Supra 40MB Quantum A500	769.95
Supra 40MB Quantum A1000	769.95
Supra SCSI Card A500	179.95
Supra SCSI Card A1000	219.95

GVP 3001 PACKAGE

25 MHz 68030
25 MHz 68882
4 MB of 32-bit memory
2599.95
with 40 MB hard drive
2995.95
with 80 MB hard drive
3499.95

AMAX Package
AMAX, 128 ROM Set & 3.5" Mac-compatible drive
439.95

FLICKER FIXER
499.95

FLICKER FIXER *plus*
Mitsubishi Multisync Monitor
999.95

As always we have the most 'customer friendly' terms: S/H $3.95 in cont. USA; $30.00 min. order ; MASTERCARD & VISA with NO credit card fee; in Texas add 7% Sales Tax. $12.00 shipping to APO addresses. RMA# required on all returns. 18% restocking charge. All prices subject to change.

ScreenX
Steve Tibbett
AmigaZone file #12151

There are plenty of paint programs these days for manipulating images on the Amiga, but you can't alter something if you can't first save it as an IFF picture. That's where ScreenX can help. While there aren't many graphics programs for the Amiga that *won't* save an image as an IFF file, what if you need to grab an image from a spreadsheet or database program? ScreenX makes this easy in most cases, especially because it never requires you to bring the screen you want saved to the front. You never even have to touch the screen in question; just select its name from the current list that ScreenX provides. Other ScreenX features, such as a screen information option and the ability to "go to sleep" (in the form of a title-bar memory/clock program), make it easy to live with.

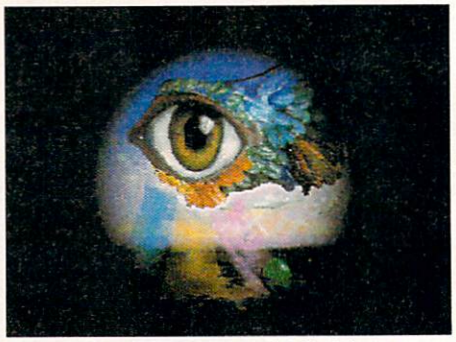
Capture
Hash Enterprises
AmigaZone file #14563

Capture is a program that will convert any number of frames from virtually any animation to IFF Anim format. (To be technically correct, Capture will convert them to Hash Enterprises' *variant* of the IFF Anim format.) While this could work with any format, the main virtue of this program is to convert ray-traced animations created with Sculpt-Animate 4D (or images converted to an animation via Byte-by-Byte's Movie program) to IFF Anim format. This is *very* important, because no program I know of—not even ShoWiz (see below)—can modify or interact with Sculpt animations other than Sculpt-Animate and its Movie player.

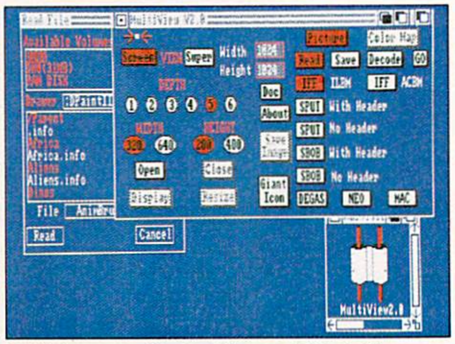
DFilter
Author unknown
AmigaZone #11149

StrpAnim
Author unknown
AmigaZone file #16939

While IFF specifications should be standard among all programs, problems occasionally arise when a graphics program varies from that standard. DFilter and StrpAnim are designed to fix such incompatibilities. DFilter alters IFF images saved by Photon Paint (with the possible exception of Photon Paint 2.0) and PIXmate so that a program expecting IFF images can read them without deviations from the IFF standard. StrpAnim alters animations created with Photon Paint 2.0 so that they can be played from The Director, which cannot handle IFF-format animations with multiple color palettes.



Planet wraps images around 3-D objects.



MultiView can display Mac and Atari ST pictures.

Planet
Russell Leighton
AmigaZone file #10072

Cube
Andy Lochbaum
AmigaZone file #10894

Here are two programs for those who don't have Photon Paint, but would like to wrap an image around a 3-D object. Planet will load any IFF image (including HAM) and output an illuminated 3-D globe, while Cube will take three 320×200 IFF images and wrap them on a 3-D cube. Both programs let you control how the image will appear.

ShoWiz v. 2.0
J. L. White
AmigaZone file #17386 (Shareware: $10)

More that just a fancy slide-show program, ShoWiz is a true presentation program. ShoWiz supplements its 26 built-in

wipes with capabilities for displaying text files in multiple colors and playing sound files. The program not only supports scripts, but also includes a number of very handy script commands, including looping, time delays, receiving user input, and displaying requesters.

ShoWiz is also capable of running other programs via the AmigaDOS EXECUTE command. While the author merely suggests that the EXECUTE command gives ShoWiz the capability, via Display or ShowAnim, to display animations, a clever user can do things with ShoWiz that nobody has ever dreamed of. In addition, because you can execute ShoWiz (and its scripts) from the CLI, you can start up ShoWiz itself via an ARexx script. While ShoWiz is not exactly The Director, its capabilities are almost as extensive.

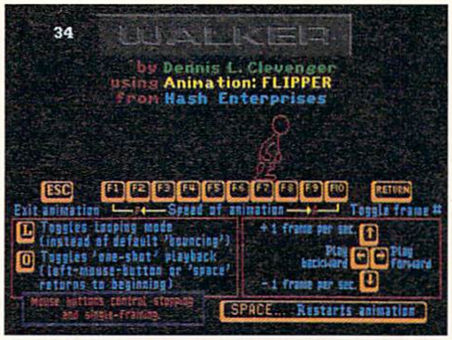
SuperView
David Grothe
AmigaZone file #14510 (Shareware: $10)

While the latest update to ShoWiz has made it top dog in the IFF slide-show arena, SuperView is still worth considering because it includes many features not found in ShoWiz, including color cycling, scrolling support for a superbitmap, and support of the IFF Author chunk. SuperView also will display Amiga Basic ACBM pictures, and allow you to alter their display sizes.

In addition, the program offers such features as auto-overscan, turning off the mouse pointer, and batch files. You can toggle many of the program's features on and off, and also set different batch-file options for each picture. Just as with commercial software, competition in the public-domain arena is always beneficial for the user.

MultiView
Wayne Houge
AmigaZone file #12346

As an IFF picture displayer, MultiView is inferior to ShoWiz and SuperView. But when it comes to handling picture formats other than IFF, MultiView is the best. In addition to displaying Amiga Basic ACBM pictures (plus specialized formats for Amiga Basic BOBs and PUTs), MultiView can also display Macintosh and Atari ST pictures (in both Neo-



Display is the best available animation-display program.

Chrome and Degas formats). The most important feature of MultiView is that it can convert pictures in any supported format to IFF format. Therefore, if you can't find a particular graphic image you need in the Amiga community, get MultiView and borrow graphics from other computers.

Display v. 3.29
Martin Hash
AmigaZone file #19380

Without a doubt the premier animation-display program, even before its recent update (version 3.29), Display is an indispensable tool for any videographer who deals with IFF Anim format animations. Display's older features, like the file requester, Workbench support, speed control (via the function keys), and many keyboard-control options (such as one-shot, single-stepping, and frame counter) have been supplemented by new capabilities. The update can drag the screen on which the animation is playing (i.e., you can now access the Workbench screen while playing an animation!), and it has a new interface that allows sound synchronization via Hash Enterprises' Animation:SoundTrack program. In addition, the file requester's device gadgets are no longer hard-coded, which means that many users (including those who have an A2000HD/A2500 with the default hard-drive partitions) no longer have to drag out the keyboard to load an animation via Display. Unless you absolutely must "ping-pong" (move forward and backward through your slide show), which it does not support, Display should be your prime choice for an animation-display program. ►

Peel
Andy Lochbaum
AmigaZone file #15792

Perhaps the most famous graphics-related public-domain program (thanks to Commodore's "Bringing the Power Home" videotape), Peel is a wipe most videographers won't want to live without once they've seen it. Thanks to Andy's update (version 2.1), Peel's reaction time is now not quite so long. The only thing I see lacking in Peel is the ability to choose the corner of the screen from which it starts to peel off the picture.

Introducer
J.L. White
AmigaZone file #10158

Although rather old, this simple presentation program is still useful. Introducer allows you to combine text, a sound sample played in both audio channels, and an IFF picture into a colorful, scrolling demo. Place the text on the bottom, in the center, or at the top of the screen, and the program will pop it in or scroll it across the screen. You can run a setup Introducer demo from an icon.

BarsnTone
Mike Berro
IDCMP (Shareware: $15)

This is a basic tool that all videographers should have. While I've seen other programs that display an NTSC color-bar pattern, BarsnTone also produces the 1kHz tone. Best of all, BarsnTone allows you to adjust the volume via a slider gadget that pops up on the screen when you hit the left mouse button. BarsnTone also displays several screens of useful information to help you use it with video equipment.

TitleGen
Kevin Kelm
AmigaZone file #18192 (Shareware: $10)

A very simple but useful video-titling program, TitleGen can scroll text only from bottom to top and doesn't support any wipes (although it can pop in a screen of text). You create all text and effects in an external text file, so it is possible to type something on a word processor, save it as an ASCII file, and then display it with TitleGen. TitleGen supports ten scrolling speeds and a few basic options, including changing the colors (only three can be used at one time), time delays, halting the display until the left mouse button is pressed, and a loop feature. TitleGen will accept any font, and it centers all text. This is the only decent video-titler I've seen in the public domain, and the author has stated that he intends to make the next update even better—if there is enough support for the program.

This is just a sample of the various public-domain programs that can help you in your Amiga work. For information on more video/graphics PD programs, be sure to get in touch with on-line services and local user groups that cater to the Amiga. While there are other sources for Amiga PD programs, such as BBSs and commercial PD disk companies, the online services and user groups are your best bets if you need help with getting an Amiga PD program to work. ■

Graham Kinsey is a former product demonstrator for Commodore and has written extensively about public-domain software. Write to him at 1015 Southern Artery, Apt. 112, Quincy, MA 02169.

Fred Fish disks: For a catalog, send a SASE and four loose stamps, or $1 to:

Fred Fish
1346 W. 10th Place
Tempe, AZ 85281

To join PeopleLink and access its AmigaZone, call:

1-800-524-0100 (voice)
1-800-826-8855 (via modem)

IDCMP BBS:
617/769-3172

AMIGA HERO

Catering to a Tough Audience



An Amiga helped update viewers about the recent quake.

WHERE WOULD YOU find the most daunting television audience in America? How about West Hollywood, California—a community of the rich, the famous, and perhaps the most astute television viewers in America.

This is Jon Merritt's audience. As television production supervisor for Channels 10 and 15, Merritt is responsible for giving the film and television mavens of West Hollywood information on local events, news, and issues. And it all has to look good.

Maybe that's why Merritt keeps buying more Amigas, and finding new uses for them.

When Merritt joined the station two and a half years ago, it had little besides an "ugly, dedicated character generator," Merritt said. He saw an ad for a character generator demo disk; when he received it, it said something about an Amiga, whatever that was.

Merritt finally tracked down an Amiga at a Federated store. "I freaked out!" said Merritt. "I couldn't believe the quality of the images, fonts, and the ability to manipulate all this stuff."

The station bought a 512K Amiga 1000 for character generating, but after picking up DeluxePaint II, Merritt found more uses. Soon there were two Amigas.

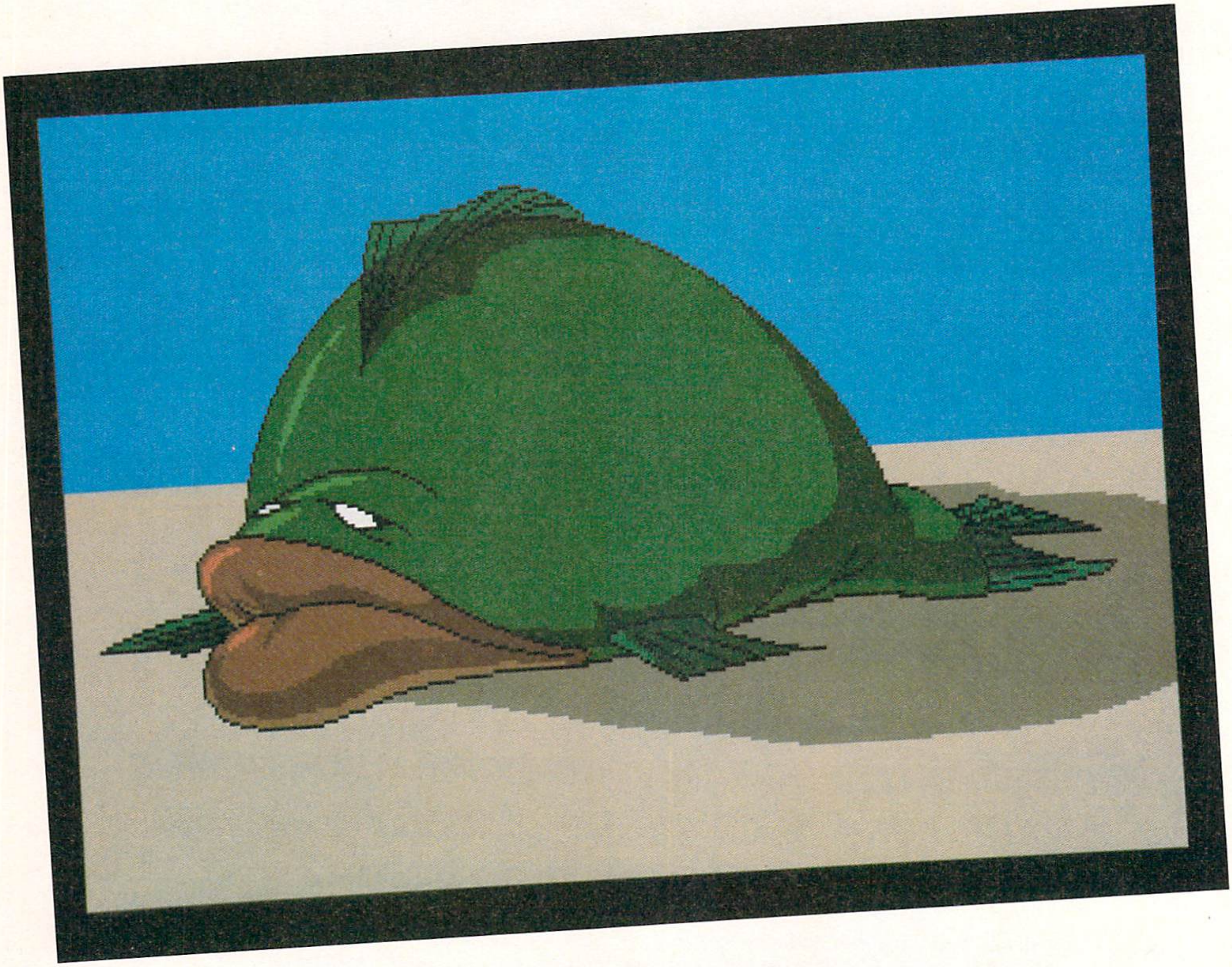
Then the station discovered genlocks and the joys of Amiga editing. A third Amiga (a 2000) was placed in the editing room for editing and character generation.

The last to arrive was an Amiga 2500 for composition and animation. "It is turning into Amiga central," Merritt said.

Merritt's core programs include Pro Video Plus for character generation, and DPaint III for background work.

Merritt's is not the only cable station that has discovered the Amiga. "It is catching on everywhere," he said. *—Doug Barney*

A 12-Step Guide to Animating With DeluxePaint III



With these techniques, you'll be reeling in trophy-winning animations in no time.



How to Make a Fish Sneeze

TOO MANY PEOPLE start from the wrong angle when trying to animate. They concentrate on technique at the expense of entertainment. Here's an example: A drawing of something, anything, it doesn't matter what, appears on the screen. It zooms into the background, then zooms back at us and spins. Then the colors cycle through the rainbow, twice. The name "Amiga" appears and flies around for a while. A character with a big black nose and white gloves appears; he makes six expressions for no apparent reason, and then his eyes pop out. When the memory runs out, the animation is finished. It may be a good demonstration of technique, but it's not very entertaining.

This kind of animation is prevalent because technique is very accessible; you can find it in the software manuals. But entertainment cannot be defined so easily.

Keep It Simple

Entertainment is the single most important thing in animation. People have different ideas about what's entertaining, but there are some rules of thumb: Keep it as simple as possible; give your characters some personality and emotion; surprise your audience, but don't baffle them; make them care about what happens; and avoid anticlimaxes.

One very entertaining type of animation is an exaggeration of a familiar attitude or expression; the artist or animator caricatures it and brings it to life. Suppose you notice a man inflating his chest as a pretty girl walks by. Your observation is universal; everyone's seen men do that. But to create an entertaining scene from this kind of material, you have to cheat a bit. A friend of mine puts it this way: "Simplify and *exaggerate*!" Make the guy's chest expand to ridiculous proportions, and his waist shrink so much that his pants fall down. Find the simplest way to get the idea across, and then shout it!

You can create an entertaining animation from a simple attitude, like a puppy trotting in time to a jazz beat, or an exhausted man walking home on a hot day. The idea should be simple enough to condense into just a few seconds. A ballerina does a dainty pirouette, strikes a graceful pose, and a safe falls on her. A cool teenager, bopping down the street in time to his boom box, trips over his shoelaces and takes a dive; his boom box bursts, spilling dozens of batteries.

Let's go through the process of creating an animation in DeluxePaint III, starting with an attitude. ►

By Eric Daniels

ICON ILLUSTRATED BY JULIA TALCOTT

1. Start With an Attitude

A COUPLE OF years ago, while I was working for an animation studio, I created one of my best Amiga animations; I called it "The Sneeze." On one particularly bad day at work, I felt like a big, lazy, sleepy blob without the muscle power to lift my head off my desk. The drawing that I was supposed to be working on wasn't coming together, so I threw it away, got a fresh sheet, and drew something that looked like I felt: a big, bloated fish out of water. I pinned it up next to my desk, and somehow it cheered me up and I got through the rest of the day. How could a depressing drawing cheer me up? It was a good caricature of an attitude.

Take a sketch pad and make your own drawing of the fish, using mine (see p. 82) as a reference. Add any personal touches that you want.

2. Make Something Funny Happen

LOOK AT YOUR fish drawing. Imagine the fish's lips twitching, trying to contain a sneeze; picture him sneezing so hard that he actually propels himself backwards, away from the camera. Not a *great* idea, granted, but one funny enough to pursue.

Close your eyes and go over it in your mind, again and again, visualizing every twitch, every pause between twitches, every false start of the sneeze, and finally, the explosion. To animate anything, you must have a very clear idea of how you want it to look and move when you're finished. Tweak the timing of the animation in your mind until you feel that it is funny, then go through it in your mind a few more times for good measure.

3. Load DeluxePaint

PLEASE NOTICE THAT this is step 3, not step 1. If you do your fine-tuning before you load your paint program, it will save you hours of work later.

To conserve memory, choose a four-color, lo-res screen. When the screen comes up, immediately press F10 to eliminate the title bar and tool strip. Why? You can't create a good piece of animation without a thorough understanding of your tools, whether pencil and paper or computer and software. The sheer number of drawings you have to produce demands that you cut every corner (of time, not quality) you can. Spend at least one full day just familiarizing yourself with the keyboard equivalents for all the tools and menu items. Then press F10 to turn off those toolbox strips; they slow you down, hamper your composition and limit your creative thinking processes. They're great for beginners, but when you really want to do some serious animating, they just get in the way.

4. Sketch the Key Frame

THIS IS AN extremely important step. After just a couple of quick thumbnail sketches, your whole idea of how to stage a scene might change.

Take your original drawing of the fish and sketch it on screen with DeluxePaint. This will be your most important drawing. In animation jargon, this could be called the key drawing, or *key frame*, of the scene; you will use this as a reference point for all subsequent drawings.

At this stage, you're not trying to make a clean, finished picture; you just want to get the major shapes into a configuration that resembles your original, hand-drawn sketch.

5. Create Your Palette

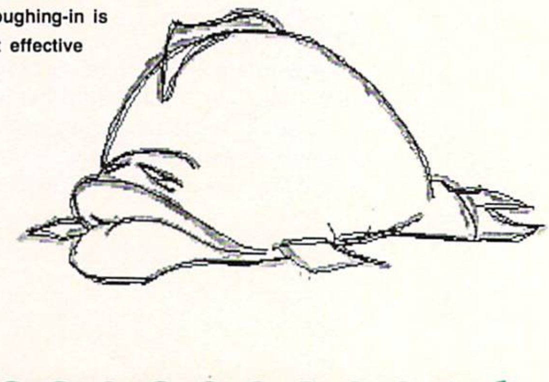
NEXT, YOU NEED to create a palette with some gray tones in it. Press p to get your palette; make the first color white, the last color black, and do a range of grays between them. (I prefer to lighten the mid-range grays a bit so that I can distinguish them more easily from the black.) Click on OK.

Click on the Period key to get the single-pixel brush, then press + once or twice to make it fatter. Press the open-bracket key ([ ) until the brush is the lighter gray. (Incidentally, one time when I *do* often use the tool bar is when I'm choosing a new color: I press F10, choose the color I want, then press F10 again.) Finally, press d to get the continuous-line tool.

6. Rough in Your Key Pose

FIRST, DRAW A rough outline of your fish. Draw it several times (without erasing) until there's a big ugly mess that looks vaguely like the overall shape you want. Press the – key, which shrinks your brush down a bit; then press], which will give you one shade darker, and draw the line again, once or twice (see Figure 1). This is similar to the way an artist

Figure 1: Roughing-in is a messy but effective technique.



using a pencil can progressively darken his lines as he zeroes in on the look he wants.

When you want to get rid of the rough preliminary sketching, you can call up the Stencil requester with the Tilde key (~) and protect your latest, darkest line; then press Shift-K to clear everything else back to white. Undo the Stencil with the Grave (') key.

If you want to continue to refine your drawing, you might want to make your darkest lines the lightest gray. Press b (for brush) and grab the whole screen as a brush with the left mouse button, hit F2 for color mode, then press open bracket ([ ) once or twice to get the lighter gray, and plop that brush right back where it was. (Pressing g to activate the grid-snap just before grabbing the brush can make alignment easier.) As an alternative, you could hit F10, choose the line color with the right mouse button, the lightest gray with the left mouse button, hit F10 again, then select "BG -> FG" from the first menu. Or, you could press p to get the palette requester, exchange the darkest color and the lightest gray, click OK, select "Color/restore palette," then "Color/remap." There are probably other ways to do this, too. Part of the fun of DPaint is developing your own way of doing things.

One tool I consider indispensable is the Stencil. I am constantly modifying which colors can and can't be affected by my actions. It's a great way to ensure that, for instance, while you're filling a bunch of small areas, you don't accidentally hit the outline. Normally you could press u to undo your mistake, but if you're going fast, you could easily go past your undo buffer.

Of course, you should always save your work often. If you don't like what you just did to your masterpiece, you can "go back in time" to just before you made the mistake. This is the greatest advantage to using the computer as an artistic tool. Use as descriptive a filename as you can, then append a number to each new saved version. When you're done, you can make an animation of your progress.

Cleanup Time

When you've finished roughing in your first drawing, it's time to clean up. One of the keys I use a lot during cleanup is q, the Curve tool. With a little planning, you can get a very clean, tight drawing in about one-tenth the time it takes to draw without it. Another advantage of using the Curve tool is that you can create the thinnest possible curved line that will hold color—a pretty important thing in animation.

Complex (s-shaped or changing radius) curves are the most difficult to achieve, but you can do it by breaking them up into sections. Here's my method: Anchor one end of the curve at the beginning of the gray line by holding down the mouse button, then drag the cursor along the length of the gray line. The line will stretch according to your mouse movements. The gray line will start to curve, then level off before it starts to turn in the other direction. That's the point you want. Let up on the mouse button at that point, and move the cursor back towards the center point on the gray curve. Before you click the mouse button and "set" the curve, though, check to make sure that it is really making the curve you wanted. If not, reposition the center point, sliding it up or down the gray line. If you can't make the right shape, you will need to break that section of the curve into two (or more) sections. No problem: Just click the button anyway, press the u key and start the whole curve again.

When you've matched one section of the line, start the next by carefully anchoring its initial point right on the last pixel of the last section you did. After locating the other end point of the curve, move the center point around, this time looking for two things: 1) matching the roughed-in line and 2) creating the illusion that this is a continuation of the previous curve. It may sound difficult, but after a little practice, you'll often find yourself locating the right spots the first time.

If you're working in hi-res, use Magnify mode (m) and the zoom keys, (<) and (>) so you can be sure you're hitting the very last pixel of the previous section. While you're still stretching, or "rubber-banding," the line, however, press m to zoom out and see the overall drawing again.

After cleaning up the entire drawing, set the Stencil (~) to protect the dark outlines, and press Shift-K to yank everything else out of there.

Note that you are not coloring your drawing at this stage. If you color it now, you won't be able to use any of the nifty tricks coming up.

So, you have a neat line drawing of an ugly fish. Where do you go from here? One approach would be to animate "straight ahead," which means draw another fish, just like the first, but slightly different, then another, then another, and so on. For some types of animation, and in the hands of an excellent animator, this can work. For this animation, however, you need the tight control of the "pose-to-pose" method. The advantages of this method are: You can control exactly which poses your character strikes; you can control the exact amount of time it takes to hit (and hold) each pose; and you can get away with doing a very small number of drawings by planning your "in-betweens" wisely.

7. Plan Your Other Poses

BEFORE YOU START making the other poses, first make a list of them. (By a pose, I mean any part of the ►

animation where things come to a temporary halt.)

The way I visualize it, the major poses, or "extremes," are:

1. Laying on the ground.
2. With upper lip twitching.
3. With lower lip twitching.
4. False start inhale (wide).
5. Build-up inhale 1 (very wide).
6. Build-up inhale 2 (super wide).
7. Fish in the background, almost tipping over.
8. Same spot, but at rest.

(See Figure 2 for the sequence.)

Here's how they would be strung together (ignoring the in-betweens for now):

1 2 1 3 1 2 1 3 1 4 1 5 6 7 8

Notice all the 1s. One of the things I like most about this animation is that you use the same drawing for about 80% of it! Part of the humor in this piece is just the tension of waiting for something to happen. One reason this tension works is the difference in wait times between events. If all the pauses were of the same length, the viewer wouldn't be kept off-balance waiting for the next thing to happen.

8. Draw Your Poses

HERE'S WHERE YOU really get to think like an animator. Add a frame to the animation. It will be an exact replica of the first. Press 2 to get to the new frame. (You can press F10 to check that you're on the right frame.) Now, using a gray brush larger than one pixel, erase the upper lip of the fish. Draw a new upper lip with one side very high, maybe even make it high enough to cover one eye. (Remember: *exaggerate*!) Draw it in gray at first. Keep in mind that if you raise the top-most line of the lip, you must also raise the center mouth line a bit, or else the upper lip will seem to just get fatter, instead of move. Clean up that lip line the way you cleaned up the rest of the fish, and press 1 and 2 repeatedly to try out your first new pose.

Now add another frame, and advance to it. Shift-K will clear the frame. (Be sure to press "Current frame only" on the clear requester.) Copy the key frame to frame 3, and erase the lower lip. Draw a new lower lip doing a forced frown, as though his nose itches. Clean it up. Test it against the key drawing by pressing 1 and 2.

Go through each of the other poses needed, and create them. When you get to the inhales, use your latest pose as the reference frame, to make sure you're getting his mouth wider each time. The impression you want to create is that each pose is the last one before the sneeze; he couldn't possibly open his mouth any wider, but then he does! To make the motion more interesting, alternate which side his sneer is on.

9. Plan the In-Betweens

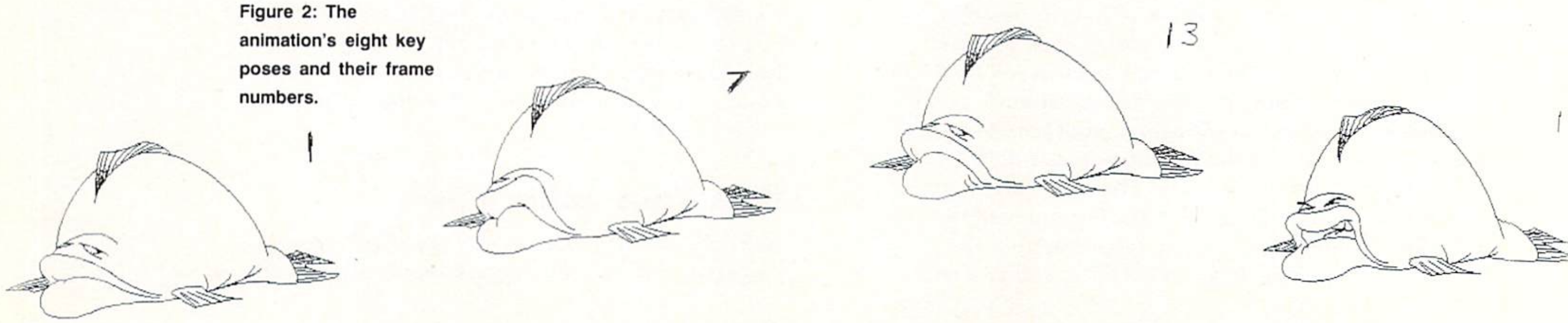
NOW COMES THE hardest part. Go back to the first frame and draw a 1 in the upper-right corner (don't worry, you'll erase it later). You now have to decide what kind of motion you want when moving the upper lip into that second pose. What seems funniest to me is a quick acceleration and a quick deceleration, without many frames in the middle. The way animators communicate that (to others as well as to themselves) is with a "timing chart." (See Figure 3 for an example.)

The top and bottom hash marks represent two extremes. The middle hash marks represent in-betweens, and the height of each hash mark represents how much it "favors" one extreme or the other.

What you need to do is draw an empty chart (similar to Figure 4) in the upper-left corner of the drawing, and label the top mark 1 (which is the number of the drawing you are putting it on).

Just start putting hash marks on it, thinking about how the motion should accelerate and decelerate, and keeping in mind that if you can place every hash mark exactly halfway between the two immediately

Figure 2: The animation's eight key poses and their frame numbers.



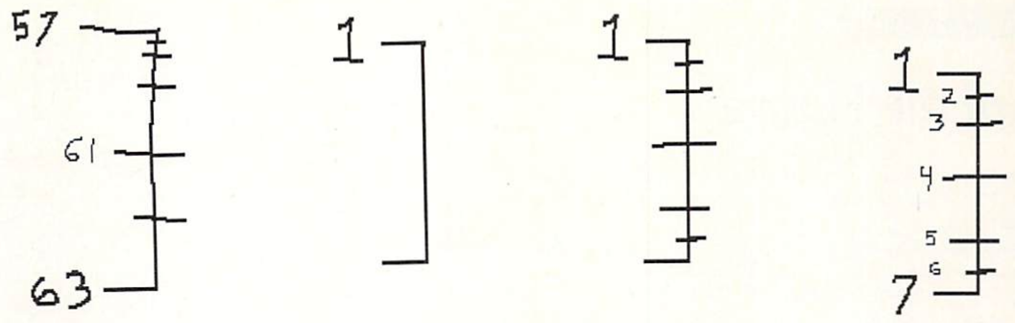


Figure 3 Figure 4 Figure 5 Figure 6

Timing charts, such as the samples above, help you pace your animations.

adjacent to it, it will be easier to create the actual in-betweens later on.

So, put a hash mark halfway between the top and bottom, then one between the middle one and the top one, then one halfway between the upper two. That's an acceleration. Now put one between the lowest two, and another between the next lowest two. That's a deceleration. (See Figure 5.)

You now have five in-betweens between the first two poses. Next, number the hash marks to find out what number the second pose will have (as in Figure 6).

Flip forward one frame, and put a big number 7 in the upper-right corner of the drawing. Plan the in-betweens that get you from drawing #7 back to the main pose, #1. Of course, you can save yourself some work by reusing the same drawings, which brings us to "exposure sheets."

10. Make an Exposure Sheet

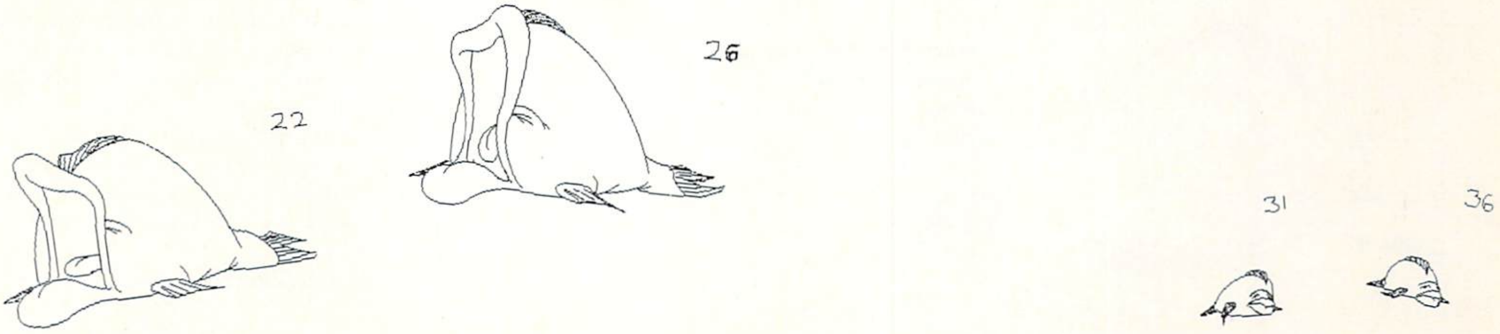
GET YOURSELF SOME notebook paper. Or, you can multitask and create your exposure sheet in a text editor.

An exposure sheet (or "x-sheet," as the pros like to call it) is a document that keeps track of which drawings are used at what times. The basic idea is very simple; in fact, in the simplest animations, exposure sheets are unnecessary. But the more complex your animation, the harder it is to keep track of everything without one.

Every horizontal line of the exposure sheet represents one frame in the finished animation. So, for instance, if your fish doesn't move for twenty frames, you leave twenty lines between that drawing's number and the next one. To save paper, we'll create our own notation to indicate that the drawing gets "held" for twenty frames.

On the first line, make a 1. How long should the fish stay there before his first twitch? Let's say three seconds. That translates to 45 frames, assuming 15 frames per second. Write a 45 right after the 1. On the next line, put a 2, and on the line after that, put a 3, and so on, until you get to the next extreme, drawing #7.

How long should we hold on drawing #7? Let's try one second, or fifteen frames. Write 15. On the next line, put a 6, then 5, 4, 3, 2, and back to 1. You get the idea; as you animate between each pair of ex- ►



AMIGA HERO

Studio of the Future

ERIC DANIELS HAS worked on both extremes of the animation spectrum. His first job, in 1979, was on the animated movie *Lord of the Rings*. This was animation the old-fashioned way—you drew it.

Still focused on more conventional animation techniques, Daniels pitched in on a variety of animation projects, from *Fang Face, Rickety Rocket*, and *Fat Albert*, to *An American Tail* and *Who Framed Roger Rabbit?*

Now at Optomystic in Hollywood, Daniels not only uses an Amiga, but also a combination of expensive and sophisticated machines. He starts with an Amiga, and depending upon the complexity of the work, he shuffles it off to a Sun workstation or sometimes to a Connection Machine, a graphics-oriented supercomputer with Cray-style performance.

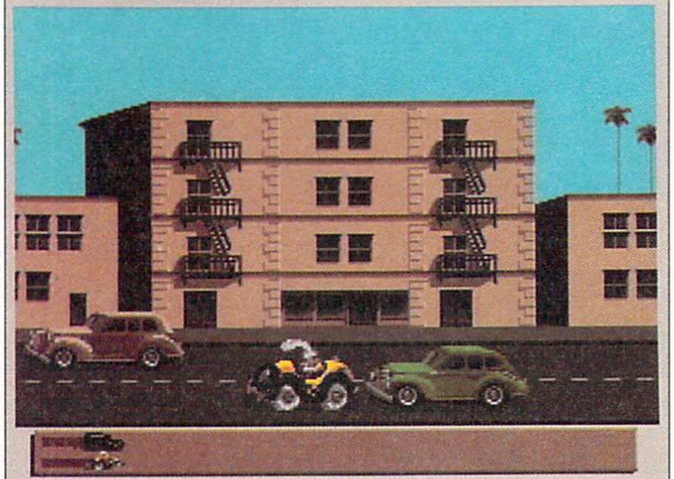
This elaborate arsenal of computers has been used to produce a rock video for The Rippingtons (combining live video and animation), and is also being used to develop TV commercials for a Canadian clothing firm.

Optomystic is attempting to create the animation studio of the future, which would be completely automated. Its current system is already almost there. Without disclosing proprietary techniques, Optomystic uses Amigas to do the bulk of the creative work, and uses the large computers for more "compute-intensive" tasks.

The most important thing to keep in mind, says Daniels, is that animations should be entertaining. "You can't expect to have people watch spinning logos if there isn't something else there."

In order to do compelling animations, the artist has to be a student of how things move. Duplicating the actual way objects or people move is more important than drawing well, he said.

—***Doug Barney***



Eric Daniels helped bring Roger Rabbit to the Amiga screen.

tremes, you fill out the exposure sheet. In this way you can plan every drawing you need before you actually draw them, which makes it easy to avoid drawing too many (or too few) in-betweens.

11. Draw the In-Betweens

THE MAIN PROBLEM with in-betweening is that you need to see the drawing before and the drawing after the one you're working on. There are some programs that let you do this; DPaint isn't one of them, but we can trick DPaint into doing it, too. The trick is to use the Stencil.

Go to drawing #1. Make sure your current background color is what it should be. Press the comma key and click with the right mouse button somewhere in the background of the drawing. Press g (for grid) and b (for brush); now grab the entire screen as a brush. Hit F2 for color mode, then press [until you get the light gray. Line up your brush copy of the fish with the genuine fish, press j (for the spare screen), and plop the fish down. Press j again a couple of times to see if you put him in exactly the right place. Go forward to the next extreme, and grab it, too. Press F2 and] until you get the darker gray; line up the two images, press j, and plop that one down too, right on top of the lighter-gray one. (See Figure 7 for an example of using the first two extremes.)



Figure 7: By overlaying two extremes you can draw in-between frames more easily.

Now, following your timing chart, you can see that halfway between drawings #1 and #7 is drawing #3. Write a 3 in the upper-right corner.

If the difference between the two images is slight enough (or if you're feeling particularly brave), you can skip the roughing-in step and press q to draw your final lines the first time in your darkest color. (Don't bother redrawing things that don't move.) When you've drawn your in-between, set your Stencil (~) to lock out the darkest color, press the Period key, d, and + +, then erase the lip lines that you don't need anymore.

Undo the Stencil ('), grab the whole screen as a

brush, press F2, and plop it back down where it was. This changes all remaining lines to black.

Press j to get back to your animation, go to drawing #1 and select "add frame" from the menu. Go forward to that frame, then press j to get back to the spare screen. Now select "Spare/copy to spare" from the menu. Press j to get back to the animation, and flip with the 1 and 2 keys to make sure everything went as planned.

Creating the remaining in-betweens should go quickly and smoothly once you have the method down.

12. Put It All Together in Order

HERE'S WHERE ALL your preplanning really pays off. Insert a blank disk in the drive. Save the entire animation as an Anim. Then save each frame individually: Select "save" from the first menu, indicate which drive you're saving to, and make sure the two little number gadgets at the bottom read 1 and 36 (or however many frames you ended up with). Then click on "save."

DPaint will save each image with the names 001 through 036. When it is finished, prop up your exposure sheet in a convenient, visible place. Flip through the animation to get to frame 1. From the menu, select "add frame." Now you have two of frame 1. You need 45. Just press the a key, which stands for "again," 43 times.

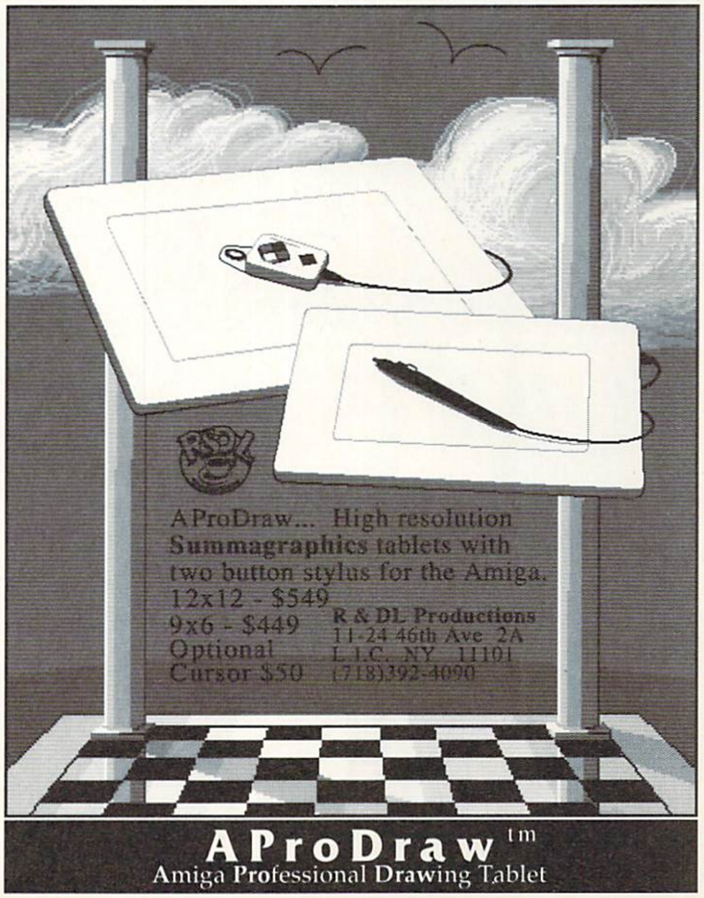
Now page forward to the drawing you drew a big 7 on. Add as many frames as the exposure sheet says. Add one more, but select "load" from the menu and load in 006, which is what the exposure sheet says comes next. Add another frame, and load in 005. (Any time you need to reuse a drawing, you must get it from the disk.) Just keep on plugging away, and soon you'll be done.

THE BIG MOMENT

Select "Control. . ./Set Rate" from the menu, and type in 15 (for 15 frames per second). Press the 4 key. . .and watch. When you save the animation, use a different name than your last save; it's a good idea to keep the version without any holds or repeats for when you decide to color it, or in case you need to change anything.

If it doesn't look exactly like you pictured it, it's a fairly simple matter to add frames to a hold, create more in-betweens where you need them, delete frames, or even scrap an extreme and replace it with a stronger one. Experiment, but save each version, just in case.

Show it to everyone you know, and get as much feedback as you can. No one can learn in a vacuum; take all suggestions seriously. ■





Create 2-D animations within 3-D animations and other special effects with these advanced Turbo Silver techniques.

Putting A Shine on "Silver"

TURBO SILVER FROM Impulse ($199) offers a wealth of features that let you define an object's attributes and world in detail. You have fine control over such qualities as Color, Reflectivity, Filter (transparency), Roughness, Specularity (the amount of reflected light on an object), and Hardness. Even more interesting, you can overlay (map) your objects with IFF images or Silver's seven built-in textures.

These last two options—IFF Mapping and Texture Mapping—and their many settings provide an exciting, unparalleled choice for special effects in animations. With so many possibilities, however, hitting on the right combination to put pizzazz in your pictures can be sheer luck. Armed with an understanding of what each option's parameters do and some guidelines, you can produce polished, professional results with IFF and Texture Mapping.

All Wrapped Up: IFF Mapping

Within Silver you can apply any IFF picture (except those in Extra_Halfbrite mode) to any object, plus give the picture the same attributes (Specularity, Transparency, Reflectivity, and so on) as you would an object. In one frame (or scene), you can map up to eight different IFF pictures. Four types of IFF wrapping are available in Silver. Flat X & Z projects the image as is onto the object. Wrapped X, Wrapped Z, and Wrapped X & Z distort the picture around the object's X, Z, and X and Z axes, respectively.

To map an object with an IFF picture, you must first load or create the object and load an axis. Size and place the axis relative to the object. Click on the axis to select it and call up the Attributes requester to enter your values for the object's Reflectivity, Filter, Specularity, Index of Refraction, and so on. Ignore the Color value, as you will be covering the object. Next, click on IFF Brush. Load the picture you want to map in the Brush menu, and select the wrapping option (Flat X & Z, Wrapped X, Wrapped Z, or Wrapped X & Z). While the axis is still selected, multi-select the object, then issue the Group command (Right Amiga-G). To pass the brush attributes to the object, press Right Amiga-K, the Cluster command.

Figure 1 depicts a three-color grid mapped on a torus in each of the four configurations. The axis was placed in the same position for all the examples.

Each picture's aspect ratio and placement are controlled by the axis on which you place the image. So, if you want the mapped image to look as it did as a full-screen picture, the X and Z axes of the axis carrying the picture must have the same aspect ratio as the screen (about four parts X to three parts Z). By altering and resizing the axis, you can dynamically change the picture size. Throughout an animation you could adjust the picture's size by changing the axis size. You can also change the picture's placement on the object by changing the axis position. By simply moving the axis in respect to the object, the picture you are mapping could move across, around, or through the object over several frames. For an even wilder animation, you could map a series of pictures on your object (such as a TV screen) over the frames, creating an Anim within an Anim. With these tech- ►

By Louis Markoya

niques you can rival the effects of network logos and promotional spots.

The Magnificent Seven: Texture Mapping

Usually a feature reserved for the high-end systems, Texture Mapping allows you to apply attributes and qualities to the surface of your objects. Turbo Silver currently offers Wood, Marble, Checks, Grid, Bricks, Angular, and Disturb textures. If you have a working knowledge of C and a desire to experiment, you can design your own textures with the supplied Texture Programming Kit of sample routines and code. Ready- and custom-made textures add great strength to Silver's rendering capabilities. Figure 2 shows each texture mapped on a sphere, but you can use them on any object—floors, walls, clothes, leaves. The opening artwork for this article, a still from an unfinished animation called "Only Amiga," uses Checks on the floor, Angular for color gradations in the swirled columns, and Disturb on the sphere in the background.

Even better, each texture has custom parameters that let you create all sorts of effects and animations within themselves. Figure 3 shows three examples of the textures Angular, Checks, and Disturb mapped with different parameters for each sphere. Although three is an extremely small sample for each effect, you can easily imagine the variations possible.

A quick look at each texture and its parameters follows. When using them, always keep the size of your object in mind. If you are not sure of your object's size you can measure it by selecting Coords On under the Object Editor's View menu. This will bring up a window showing the coordinates of the cursor. Move the cursor from one end of the object to the other to measure it. You need the size to ensure the desired effect with a texture. For example, consider an object 200 units wide. If you want to apply the Wood texture to it, you must set the texture's Ring Spacing parameter to produce the proper amount of grain. The higher the number, the further apart the grain lines. Without knowing the object size, you might use settings that are as large as or larger than the object, causing the grain to fall outside the object "space." Remember also that the requesters accept numbers between −32,000 and 32,000. Although the distinctions may be subtle in some cases, all values will produce different results. The RGB selectors, which control the texture color, will index to over 32,000, but will accept values no higher than 255, the maximum color value.

Faced with such a vast number of combinations, you need a reference point from which you can experiment to customize your objects. To duplicate the examples in Figure 2, follow these steps. Load a sphere into the Edit Screen, then select it. Double the sphere's size by pressing F6 and entering 2 for the X, Y, and Z scales. Select F7 to give attributes to the sphere. In the Attributes requester, leave the Color, Reflectivity, and Filter values as they are (except for the brick and wood spheres, whose colors you should set to maroon and light brown, respectively). Turn up Specularity to 200 and Hardness to 100. Select Custom (Index of Refraction) and enter 2.00. Click on Texture. Go back to the editor, load the desired texture from the Texture menu, and then enter the parameters described for each below.

Wood and Marble

Wood and Marble are very similar. They map grain or veins on your object to make it look as if it were carved from a block of wood or marble. Marble veins run along the object's Y axis and the Wood veins run concentrically around the Y axis, creating a ringed, grain effect. The lines are quite regular and dither



Figure 1. An IFF file mapped to a torus in each possible perspective.



Figure 2. Silver's seven built-in textures.

Smooth Transitions

NOT TO BE outdone in the special effects department, Sculpt-Animate 4D (Byte by Byte, $499.95) demonstrates real power in its Morphing (short for metamorphosizing) feature, which lets you slowly transform one object into another. Sculpt is extremely powerful because it defines few rules for the process, allowing you to use your imagination and object-editing skills to their best advantage. In this method, you build two objects and scenes, then designate them as the beginning and end key frames. Sculpt then automatically renders as many in-between frames as you specify. You can use this technique as a shortcut to avoid tediously redrawing the in-between cels of a traditional animation or to produce Escher-like transformations and special effects.

First, create or load the object or shape you wish to transform into the second shape, then save it as a key frame. If you use a simple structure, be certain to call the Edit, Do, and Subdivide options a few times when you create it to provide enough points from which to build your second object. Make sure the original and final objects have the same point count. In addition, you must create the second object from a copy of the first, then save it as a second key frame. Sculpt's object format tracks all points of an object and assigns each a unique number. Because Sculpt knows each point's start and end location, it can interpolate the transition locations. Be careful not to Subdivide too many times, however, as each new subdivision (and the points it creates) make creating the new object more difficult. You can even change the object's color, attributes, and smoothing in the process, all with slick transitions between frames.

To use the Morphing technique, first set up a scene with the light, observer, target, and original object in place. From the Project menu, choose Load Take (use any name to create a new Take), then choose Modify Take from the Edit menu. The Global requester will appear. Now, specify the number of frames over which you want the transition to take place. Toggle to the Frame requester by clicking on the Global gadget. Next, in Frame 1 click Key Frame to Yes and save it as the first key frame. To set the last frame as a key frame, click on the appropriate box and click Key Frame to Yes.

Back in the main screen, use the points from the original object and scene to create the final object. While it will slow down the process, render the frame to verify the results before proceeding—it will save time in the long run. Now, choose Modify Take in the Edit menu as before and go to the Frame requester to save the second key frame. Click on the Frame gadget to return to the Global requester, then instruct the program to Render All.

When you render the Anim, Sculpt automatically calculates all the in-between positions of your two objects, providing for fluid transitions that create an illusion of transformation. Sculpt will even calculate and execute smooth color transitions between the objects, as well. Caterpillars turning to butterflies and fish evolving into birds all become an easy task with this powerful feature. □ *—LM*

slightly from the vein color to the base color. The texture's base color is the object's original color, while you can define the grain or vein colors.

In addition to the colors, you must set the Ring Spacing (or Layer Width), Shift X, Shift Z, Variation, Random Seed, and Exponent parameters. Ring Spacing (or Layer Width) controls the width between the rings (or veins) on the object. The lower the number the closer together they are, and the more will fit on the object. Shift X and Shift Z move the ring's center (or marble pattern) along the X and Z axes, respectively. Variation, which accepts values from 0 to 1.0, makes the rings or veins less regular, while Random Seed modifies Variation even further. Exponent alters the thickness of the rings and veins. The lower the number, the thicker the ring or vein. Low values for Random Seed, Variation, and Exponent will produce regular, more regimented patterns, but as you deviate in either direction (steps of 5 or 10 are good), the pattern will look more realistic and chaotic.

The parameters used in Figure 2 make a good starting point. Enter the following values: 70 Red, 40 Green, and 0 Blue for Wood grain color (or 0 Red, 0 Green, and 200 Blue for Marble vein color), 20 Layer Spacing, 5 Exponent, 20 Shift X, 20 Shift Z, 10 Variation, 0 Random Seed. To add special effects, you could vary the shifts, spacing, variation, or color values over the cels of your animation.

Checks, Grid, and Bricks

Checks will map squares of the specified texture color on an object, alternating with squares of the object's original color. To produce "normal" checks, such as on a chess board, you must specify multiples of 32 for the Check Size (64, 256, and so on). All other numbers will produce varying patterns, many quite complex and beautiful. Figure 3 shows some of the irregular checked patterns possible. Flat or minimally curved surfaces display the effect best. For animation you could add shifts in checkered patterns for a "digital floor" look and color cycling for changes. The Figure 2 sample uses 0 Red, 255 Green, and 0 Blue for color and 32 for Check Size.

Like Checks, Grid defines square patterns. To understand the difference, think of Checks as linoleum squares and Grid as a pattern of square tiles with lines of grout between them. While other textures take on the same attributes (Filter, Reflectivity, and so on) as the object, Grid lets you define these parameters for the grid lines too. If you want to define a grid to look like grout lines between shiny tiles, you can adjust the lines' dullness, glossiness, or even ►

roughness. The object on which Grid is mapped provides the "tile" color. Grid Size specifies the total size of the squares, while Line Size determines the grid lines' width. Be careful: If the Line Size is greater than or equal to the Grid Size, your object will be completely line colored.

With all of Grid's parameters, you can easily create special animated effects. I made one Anim in which the Grid Size remained the same but the Line Size varied over the frames, making the floor tiles appear and disappear as the grid lines expanded or contracted. For the example sphere of Grid, I used a Grid Size of 10, a Line Size of 3, a Red value of 200, Green of 0, and Blue of 0 for Color, and left all the other attribute choices at 0.

Bricks maps a surface with mortar and bricks. Like Grid, the texture attributes define the mortar (or grout) line's color and width; the object provides the brick (or tile) color. The difference is that Bricks gives you X and Z controls to define the shape of the brick, as well as offsets you can use to shift the layers of brick. Brick Size in X, Y, and Z specify the brick's width, depth, and height relative to the object's X, Y, and Z axes respectively. X Shift on Z Axis alters the layout of brick layers in the object's Z direction, while X Shift on Y Axis alters the brick layout in the object's Y direction. Z Shift on Y Axis alters the brick layers in their height (Z axis) as they increase in their depth (Y axis). Values half the X (or Z for the latter) size of the bricks stagger their placement. Very low shift values or those near the appropriate axis' Brick Size give the illusion of slanting rows. X, Y, and Z Offsets shift the brick pattern along the object's X, Y, and Z axes.

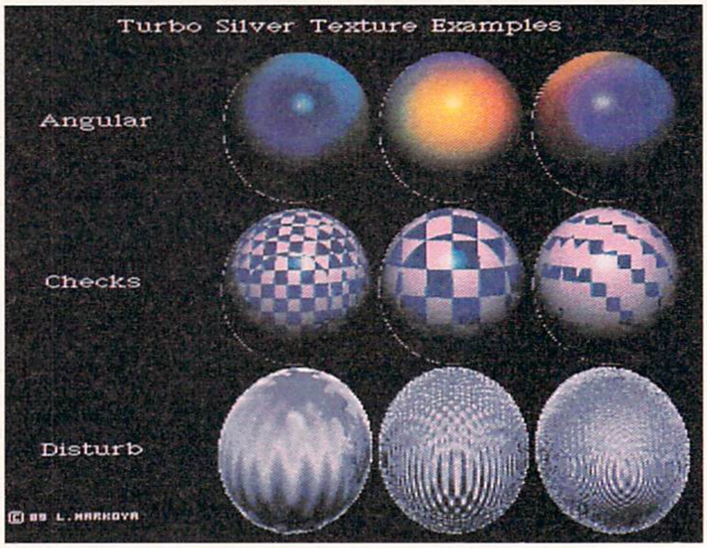


Figure 3. The effects of changing a texture's parameters.

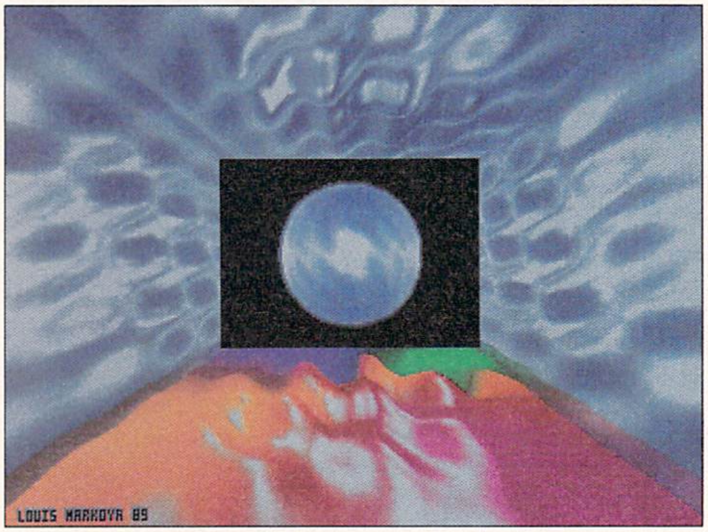


Figure 4. The Waveroom demonstrates the power of Angular and Disturb.

The Brick example used the following parameters: For the Mortar color, Red, Green, and Blue were all set at 100, X Size equaled 40, while Y and Z Sizes equaled 20. Mortar Size was 5. All Shifts were set at 20, and Offsets were at 0.

ANGULAR AND DISTURB

The Angular and Disturb textures are the most powerful of the group, allowing you to accomplish spectacular effects. I combined them to produce the "Waveroom" Anim (see Figure 4 for a still) that I debuted at the July '89 SIGGRAPH. The rippling colors and waves, not my artistic abilities, drew the crowds from the big workstations just steps away.

Angular is a complex texture that allows you to map different colors across each of the three axes of an object. You can add up to five colors on top of the object's original color. This allows for beautiful rainbow effects and smooth color gradations across the object. By cycling the colors or rotating the object, you can achieve fantastic color changes, and nowhere else is the effect reproducible.

First enter the End X Red, Green, and Blue values. The Start X values are the object's attributes (the parameter set in the Attribute requester for color). To map colors on the top and bottom, use the Start and End Z parameters; for the front-to-back color, use Start and End Y settings. Always specify RGB values for all the parameters. If a set remains at all 0s, the color will be black. If you want fewer than six colors, set the "extra" parameters to the object's color.

The parameters for the example in Figure 2 were: 200 Red, 100 Green, and 0 Blue for End X; 200 Red, 0 Green, and 100 Blue for Start Y; 0 Red, 0 Green, and 200 Blue for End Y; 200 Red, 0 Green, and 0 Blue for Start Z; 0 Red, 200 Green, and 100 Blue for End Z.

Capable of fantastic results, Disturb's parameters allow for what is commonly called "Bump Mapping." By adjusting the parameters of this texture you can give an object the appearance of having a bumped, or

Quick Fix #4

The Lazy Susan School of Animation

RECENTLY, I WAS faced with an interesting problem: create a 3-D style animation with a 2-D paint program. My client wanted something similar to the old Universal Pictures logo of the late 1930s (the Universal logo circling an image of the Earth). I turned to my trusty digitizer and, with its help, devised a quick and simple solution to the assignment.

My first step was to assemble the following items: an inexpensive Lazy Susan (revolving platform), an empty instant coffee jar, a piece of black velvet, Digi-View and my digitizing copy stand, and DeluxePaint III.

I used a PostScript printer to produce the company's logo in reverse (white letters on black), lengthwise on an 8½×11-inch piece of paper. Then I wrapped this around the coffee jar, carefully lining up the paper so that the line of type was parallel to the bottom of the jar.

Next, I draped the black velvet behind the copy stand to block out the background. Then I placed the Lazy Susan in the center of the copy stand, set the jar and logo on it, and adjusted my lights.

Earlier, I digitized a NASA image of the Earth in space, which I now loaded and displayed on my Amiga monitor. After removing the camera from the copy stand and placing it on a tripod in front of the set, I temporarily connected the camera's video output to the monitor's input. Now I could adjust the size and placement of the logo around the picture of Earth by quickly switching from the computer image to camera image and comparing the two.

When I was satisfied with the logo's appearance, it was time to digitize the frames. Earlier, I used a protractor to mark off five-degree segments around the edge of the rotating platform. Then I straightened a paper clip and taped it on the table (out of the camera's field of view) in front of the Lazy Susan and lined up each mark as I rotated it. From this point on, it was a simple matter to digitize a frame, rotate the platform to the next mark, and repeat the process.

To complete the process, I created an AnimBrush of the rotating logo in DeluxePaint III, stamped this over the image of the Earth using the move menu's controls, and saved this as my completed animation. □

—Gene Brawn

disturbed, surface. You can adjust the size and spacing of the bumps, as well as the interaction of bumps between two axes. The waves, or ripples, are mapped primarily in the Y direction of the object. You control the amount of disturbance by changing the Amount <1 parameter; accepted values fall between 0 and 1.0. The higher the number, the greater the disturbance. The Wavelength controls the distance between crests along the Y axis. The lower the number, the closer together the waves. X Separation changes the phase, or direction, of the wave along the X axis. For Small <1 (whose values range from 0 to 1.0), low values result in large waves, while higher values (0.7 to 0.9) result in tight ripples. Effects such as dynamic water droplets and ripples, waves, and swirling sand dunes are possible. The Disturb sample settings are: Amount <1 equals 0.1, Wavelength equals 20, X Separation equals 5, and Small <1 equals 0.9.

While not often thought of as animation tools, Turbo Silver's IFF and Texture Mapping features offer great strength to supplement the program's Key-Frame and Movie animation controls. The combination allows for unlimited effects and transformations. For the feel of real power, results like the pros, and effects to surprise and stun, try Turbo Silver. ■

Louis Markoya is the 1989 winner of the AmiEXPO Art Conference's 3-D competition. Write to him c/o Amiga-World *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

AMIGA HERO

"Window" on Manhattan



IT MAY SOUND inconceivable to Amiga users, but graduate students in the Interactive Telecommunications Program at New York University's Tisch School for the Arts used to put out a television program with the help of Apple IIs. It took savvy and skill to crank out a product worthy of airing.

About four years ago, however, NYU got an Amiga. Ever since, NYU students have used Amigas to produce *Window*, a 15-minute public-television program for Manhattan Cable Television.

The magazine-style program, which airs several times daily, includes a variety of segments, said Red Burns, chairman of the department. All of the elements of the program are created on the Amiga, including logos, text, digitized photos, video, and animations, as well as graphics created from paint programs.

The program uses eleven Amigas, and relies largely on DeluxePaint III, The Director, Digi-View, FrameGrabber, and TV*Show, said Pat Quarles, Assistant Professor of Communications.

Although it is a lot of fun, *Window* isn't just for kicks. It is an integral part of the school's highly demanding graduate program in interactive television. This program seems to convert many students to the Amiga (who later end up buying one), and also attracts students who already have Amigas. According to Red Burns, the Amiga owners tend to be more creative, adventurous, and willing to take risks. ***—Doug Barney***

Fine Art in Motion

Producing animations with Photon Paint 2.0 will pack your palette with all the creative power of 4096 colors available in HAM mode—if you know the right "moves."

By Heidi Turnipseed

HAVING ALL OF the Amiga's 4096 colors at your disposal can lend extraordinary subtlety and realism to your animations. Using a HAM (Hold-and-Modify) mode paint program to create your animated sequences, however, involves some equally subtle matters of technique. As a professional animator with extensive experience in using Photon Paint 2.0 (MicroIllusions, $149.95)—currently the only Amiga HAM painting program that includes animation-production tools—I have developed a few methods of working that you may find helpful.

The technology that lets you display any or all of the 4096 available colors simultaneously on the screen necessitates some special forethought when designing the palette for your animated scene. The problem is that any time you paint two colors next to each other that are not both "base colors" (the colors held in the Amiga's 16 color registers), you must create a series of transitional colors between them. In certain instances, these colors do not blend smoothly or cleanly, leaving you with what are called "fringe colors" or "HAM artifacts." Later, when you are assembling your animation, this "fringing" will cause an annoying flicker in your moving animation.



Choose your palette colors carefully to avoid "fringing."

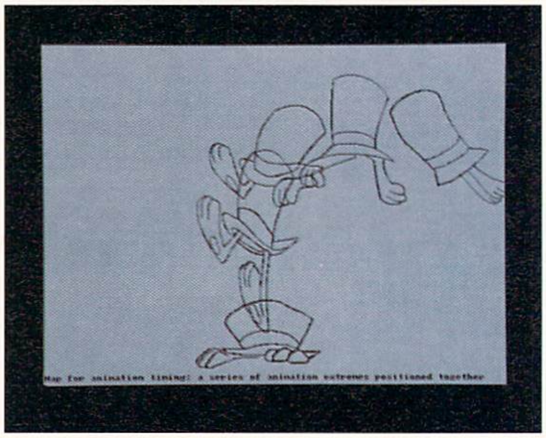
Photon Paint uses the first 16 hues displayed on the top line of its 64-color palette as the base colors. These can be painted directly on the screen, right next to each other with no transitions necessary. You can display any additional colors in HAM mode only by modifying the color(s) to the immediate left of the newly applied color. Photon Paint modifies in one-pixel increments the Red, Green, and Blue (RGB) values of any color to the immediate left until the newly painted color results. If only one of the above values needs to be modified, only one pixel of a transitional stage will be displayed to the left of the newly painted color. If all three values need to be modified, a three-pixel transition will occur. These transitions can create a flickering effect around the edges of any shapes that are moving across your background during the animation. You can minimize this effect, however, by planning your palette carefully before you create your animation.

Paint Your Surrey—Without a "Fringe" on Top!

In most cases, Photon Paint's default base colors will yield the best results because they include a repre- ►

sentative of each major color group. When you boot up the program you will see in the top row of the palette several shades of gray; bright red, green, and blue; pure yellow and lavender; pale blue; and white. If you plan to use certain groups of colors almost exclusively within your background painting, replace some of the shades of gray in the default palette with additional shades of these colors. Make your choices with an eye also towards the colors you will be using for painting your moving objects and characters—good planning here will minimize the fringing effects.

Use one of the neutral grays from the default pal-



Map out the action before you draw your cels.

ette to outline your moving shapes, thus ensuring that a base color will always be next to your background colors while shapes move around on top. If you plan to paint the interior of a shape with a non-base color, selecting a gray for your outline will entail only a one- or two-pixel transition between it and the fill color—very subtle. Design the transitions into the interior of the moving shapes; the transitions will remain constant and may add a feeling of dimension to the outlines of the shapes. A contrasting non-base color outline would create constantly varying transitions as it moved across the colors in the background painting. These changes from frame to frame during animation can produce a distracting flicker.

If you have digitized a series of pencil animation drawings and intend to use Photon Paint to paint them, there are a couple of ways to compensate for the fringing transitions mentioned above. You can remap the drawings before painting them, so that the shades of gray present in the digitized outlines correspond to the grays remaining among your base colors, then flood-fill the shapes in the usual manner. The Remap Picture option appears in the Base Colors submenu of the Project menu.

You can also utilize the Blend requester to set a percentage of blending between the color you use for interior shapes and any underlying colors, including the digitized outline. This allows you to use the Freehand Fill tool to fill the shapes by tracing over the outline. The shades of gray within the outline will then become a deeper shade of your interior fill color—a very nice effect. Then select the most predominant colors within the outline that resulted from this blending process, and copy them into the top row of the palette.

Using the method outlined above, you will probably end up with two or three analogous colors from the outline of each different fill color. This gives you a nice variety of base colors for your background to minimize fringing. Place most of the additional colors you will need for the background painting in unused positions in the top palette line. If you intend to use a range of hues from a particular color family—say, several different greens—choose one midway, and include it among the base colors in the top palette row. This way, the fringing effects that will occur between colors in this range and any adjacent colors will be subtle—less noticeable during animation. Once the upper palette row contains the desired collection of base colors, select Affect Picture from the Base Colors submenu of the Project menu to assign these colors to the Amiga's 16 color registers.

How Did I Get Into This Scene, Anyway?

Another task animators face is that of overlaying a series of moving objects and characters on top of a single background painting they plan to use for the scene. Photon Paint includes a tool designed to facilitate this process: Merge to Next.



Photon Paint's Merge-to-Next tool lets you easily overlay your animated characters on a single backdrop.

AMIGA HERO

From Disney to Amiga

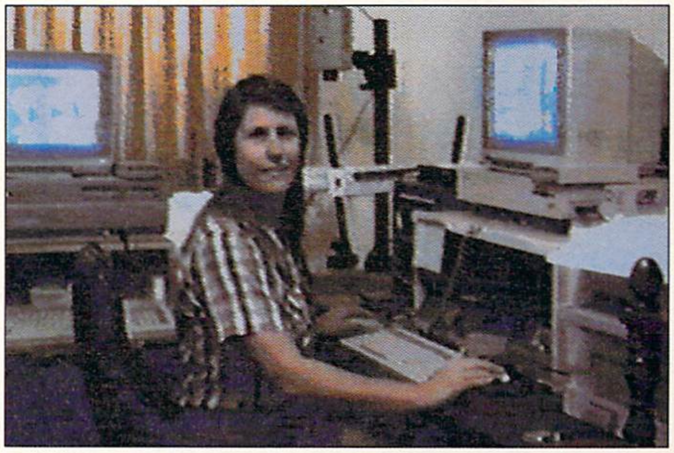
IT'S NOTHING NEW that the Amiga and animation go hand-in-hand. But do you know what the Amiga and Walt Disney have in common? The delightful talents of Heidi Turnipseed.

The year was 1972. Heidi, fresh from the California Institute of the Arts, joined the ranks at Walt Disney Studios as an "in-betweener" (rookies that fill in with drawings between key frames) to Don Bluth of *Pete's Dragon* fame. It was this same cartoon that single-handedly and simultaneously launched Don Bluth's career. It also separated Heidi from Disney in 1979.

The newly-formed Don Bluth Productions went on to create *The Secret of NIHM, An American Tail*, and Dragon's Lair, the first originally developed, fully-animated arcade game. The success of Bluth and his subsequent decision to move his company to Ireland urged Heidi to make another move. This time she decided to take the ultimate plunge and go out on her own.

Thus Heidi began her journey towards becoming one of the most well-respected and capable computer animators, particularly renowned for her game work. Once on her own, Heidi started to explore computers. "I had heard about computer graphics and started writing letters," Heidi recalls of her inquiries to established computer-graphics artists. "I got a lot of help."

Why the Amiga? "I was leafing through a copy of *Insight* magazine and noticed an ad for the Amiga and tore it out," she said. A previous look at the Macintosh, with its lack of animation software and ample price tag, had proved disappointing.



Animator Heidi Turnipseed surrounded by her tools.

Her career as a computer animator, and her Amiga, have both meant a lot to Heidi. "It's a wonderful opportunity for women to become independent in business. I love it."

Heidi's latest projects include *The Jetsons* ("an interesting and witty little mystery") and an industrial film about a water purification system for HOH Water Technologies.

—Jan Jackson

First, prepare the image you want to merge over the background painting by filling the blank space around the image with a selected background color not already present in the image. Photon Paint treats the background color as transparent during the merging process. If you used digitized pencil drawings, you may need to clean up stray pixels around the image; they will become apparent when you fill the background area with a color other than white or light gray.

After you have prepared your image, select Append Page from the Project/Alternate submenu; you will move forward to a new blank screen. Load the background painting into this newly created screen, return to the image on the page immediately ahead of it, and select Merge to Next from the Project/Alternate submenu. The program takes you to the next screen with the background painting on it, and then scans in the previous image over the background. Repeat the process to create a series of animated images moving across the same painting.

A Map to All the Action

One technique I learned during my apprenticeship at Disney Studios involves creating a sort of "map" on a single page, showing each position of an object as you intended to move it across the background. Mapping lets you observe the relative distances between stages of movement. Knowing the number of frames you need for a particular path of action, you can position and reposition each image until the action is evenly distributed across the area required, within the number of stages allowed. You can also be certain that when you speed up movement or slow it down, the rate of the action increases or decreases gradually.

When all phases of movement are present on one page, you can compare them easily and adjust them. Later, you can copy each phase of movement onto separate pages by registering a "brush" copy of each stage directly on top of its postition on the "map," switching to the next alternate page, stamping the brush copy into place, and saving that page under its required number. Then clear the alternate screen and copy the next image in the series onto it until all stages of movement are copied and stored on separate page numbers. You can also do this over the intended background painting.

Photon Paint provides a special tool for creating shadows as you stamp a brush into place—perfect for use with the above technique. Paint a small set of crosshairs next to the original image just before copying it as a brush, so that you can match its position exactly when you register it to itself and switch screens. Use the equivalent keyboard command (K) to advance to the next screen without moving your mouse; then use the equivalent keyboard command for the left mouse button (ALT-Left Amiga) in order to stamp your brush into place without moving the mouse accidentally and shifting the image out of position when you try to press the button.

If you follow the few tips and techniques outlined here, you should benefit from cleaner, crisper animations that will make the incredibly rich and colorful results of using a HAM program even more satisfying. ■

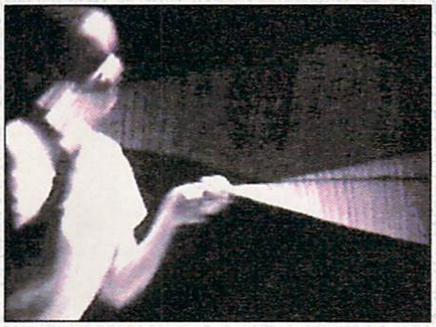
LIVE! Performance

We'll help you tune up the tools and teach you the techniques you need to create special effects with LIVE!.

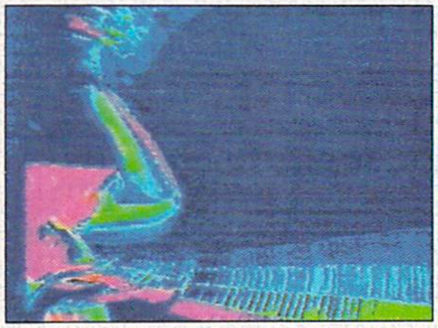
By Michael Hanish

WITH THE LIVE! digitizer and the many programs that work with it, you can create a symphony of special effects. You can capture a moving video signal and manipulate it in almost real time—add transitional effects (tiling, spirals, and zoom), colorize it, overlay it with graphics, then save it to videotape.

When setting up your system, as with forming any ensemble, you must take into account each member's strengths and eccentricities. Not all will play together and some need special attention. After auditioning the available software, I'll show you how to combine their best individual performances into an impressive production. *(See Company List on page 128 for addresses and phone numbers of companies mentioned in this article.)*



A performer captured from a camera's signal.



The same performer enhanced by Invision.

The Stage

The Amiga 2000 version of LIVE! (A-Squared, $450), our platform for this show, installs inside the machine and provides four BNC connectors, two in and two through. If you want to use either or both of the two factory-terminated pass-throughs, you must reconfigure the little pin-block arrangement on the board. Do it carefully with everything disconnected and grounded. If you do reset the pin-blocks, make sure the connectors are terminated when not in use to avoid degrading the signal. When you install the board into the Amiga's slot, check that it is properly seated. You cannot secure the board to the case, so changing connectors can unseat it slightly—be careful. The BNC connectors are a nice touch, much more solid than the usual RCA type. Take advantage of them; avoid adapters and buy new cables with the proper connectors if you must. The video signals will be more stable and free from noise.

The **LIVE!2000** software adds a page of effects to the earlier versions. You now have a choice of inputs (use the top, bottom, or both) and effects such as tiling, spiral, keyhole, mirror, fresnel, and zoom. The description sounds good, but the system has a couple of problems. The effects seem to be available to the top input and in non-overscanned lo-res only. Their quality is rather poor and the images are grainy and often break up with horizontal noise lines. Because the ef- ►

Computer Mart

BEST BUY

SUPRA 2400 MODEM

$119.00

HAYES COMPATIBLE
300/1200/2400 BAUD

SOFTWARE

3-DEMON	68.00
3D FANCY FONTS	48.00
AARGH	21.00
AC BASIC	135.00
AC FORTRAN	198.00
AEGIS DRAW 2000	168.00
AMIKIT	24.00
ANALYTIC ART	38.00
ANALYZE 2.0	62.00
ANDROMEDA MISSION	25.00
ANIMAGIC	63.00
ANIMATE 3D	95.00
ANIMATOR APPRENTICE	187.00
AQUAVENTURE	24.00
ARCHITECTURAL DESIGN	22.00
AREXX	30.00
ARKANOID	25.00
ASSEMPRO	69.00
ATALK III	60.00
ATREDES BBS PRO.	90.00
ATREDES TERMINAL	30.00
B.A.D.	30.00
BARD'S TALE II	37.00
BATTLE CHESS	30.00
BAUD BANDIT	30.00
BBS-PC	92.00
BENCHMARK MODULA 2	138.00
BENCHMARK LIBRARIES	69.00
BEYOND DARK CASTLE	21.00
BLITZ. ON THE ARDENNE	37.00
BLOOD MONEY	24.00
BREACH	28.00
BRIDGE 5.0	22.00
BUBBLE BOBBLE	26.00
BUBBLE GHOST	25.00
BUTCHER 2.0	23.00
CALIFORNIA GAMES	27.00
CALLIGRAPHER	74.00
CAPE 68K ASSEMBLER	59.00
CAPONE	35.00
CAPTAIN BLOOD	31.00
CARMEN SAN DIEGO	27.00
CARRIER COMMAND	28.00
CENTERFOLD SQUARES	20.00
CHESSMASTER 2000	31.00
CHRONOQUEST	24.00
CITY DESK 2.0	120.00
CLUE	24.00
COMICSETTER	66.00
COMICSETTER DATA DISKS	22.00
CRITICS CHOICE	150.00
CYGNUS ED PRO	60.00
DARK CASTLES	28.00
DATARETRIEVE	53.00
DEATH BRINGER	24.00
DECIMAL DUNGEON	32.00
DELUXE HELP DISKS	22.00
DELUXE MUSIC 2.0	69.00
DELUXE PAINT III	99.00
DELUXE PHOTO LAB	98.00
DELUXE PRINT II	57.00
DELUXE PRODUCTIONS	138.00
DELUXE VIDEO 1.2	86.00
DEMON'S WINTER	27.00
DESIGN 3D	60.00
DESKTOP BUDGET	42.00
DESTROYER	27.00
DEVPAK ASSEMBLER	60.00
DIGI PAINT 3.0	66.00
DIGIWORKS 3D	78.00
DIRECTOR	44.00
DIRECTOR TOOLKIT	28.00
DISCOVERY DATA DISKS	14.00
DISCOVERY MATH	28.00
DISC. SPELL	28.00
DISC. TRIVIA	28.00
DISK MASTER	48.00
DISK MECHANIC	55.00
DOS TO DOS	32.00
DOUGS MATH AQUARIUM	51.00
DOWNHILL CHALLENGE	21.00
DR. T'S SOFTWARE	CALL
DRAGON'S LAIR	39.00
DRUM STUDIO	30.00
DUNGEON MASTER	24.00
DYNAMIC DRUMS	51.00
DYNAMIC STUDIO	138.00
EARL WEAVER BASEBALL	35.00
EMPIRE	35.00
EMPIRE STRIKES BACK	24.00
ENCHANTER	21.00
EUROPEAN SCENERY DISK	18.00
EXCELLENCE	174.00
EXPRESS PAINT 3.0	78.00
FA INTERCEPTOR	35.00
FACC II	24.00

Kronos A2000 HardCard
Fast Autobooting Controller

Non-DMA design delivers DMA Speeds without the problems associated with typical DMA controllers. For A2000 Only

Super Low Prices on Quality Kronos

Kronos Card w/Frame	$216.00
Kronos w/ST-157N 48 Meg	$638.00
Kronos w/Quantum 40	$786.00
Kronos w/Quantum 80	$1085.00
Kronos w/ST-296N 80 Meg	$789.00

FAERY TALE ADVENTURE	35.00
FAERY TALE HINT BOOK	10.00
FALCON	30.00
FAMILY TREE	30.00
FANTAVISION	38.00
FEDERATION	30.00
FERRARI FORMULA I	35.00
FINE PRINT	30.00
FIRE POWER	16.00
FIRST LETTERS & WORDS	35.00
FIRST SHAPES	35.00
FLIGHT PATH 737	19.00
FLIGHT SIMULATOR II	36.00
FLIPSIDE	38.00
FLOW	65.00
FORMS IN FLIGHT II	72.00
FORTRESS UNDERGROUND	19.00
FRACTION ACTION	32.00
GETTISBURG	42.00
GIZMOS 2.0	44.00
GNOME RANGER	14.00
GOLD RUNNER	28.00
GOLD SPELL II	29.00
GOLDEN PATH	32.00
GOMF 3.0	24.00
GOMF 3.0 W/ BUTTON	51.00
GRABBIT	21.00
GRADE MANAGER	52.00
GRAND PRIX CIRCUIT	28.00
GRAPHIC STUDIO	38.00
GREAT STATES II	25.00
GRID START	19.00
GAUNTLET II	35.00
HACKER II	28.00
HARDBALL	28.00
HARRIER COMBAT SIM.	35.00
HARRIER MISSION	19.00
HEROES OF THE LANCE	26.00
HITCHHIKERS GUIDE	21.00
HOLE-IN-ONE MIN. GOLF	22.00

HOLLYWOOD POKER	22.00
HONEYMOONERS	25.00
HUMAN DESIGN	22.00
HUNT FOR RED OCTOBER	35.00
HYBRIS	24.00
INDOOR SPORTS	35.00
INOVATOOLS #1	55.00
INSANITY FIGHT	28.00
INTELLITYPE	35.00
INTERCHANGE	32.00
INTERFONT	72.00
INTERNATIONAL SOCCER	24.00
INTROCAD	51.00
INVESTOR'S ADVANTAGE	66.00
JACK NICHOLAS GOLF	30.00
JET	36.00
JET SET UTILITIES	24.00
JEWELS OF DARKNESS	21.00
JIGSAW	30.00
JINXTER	28.00
JOE BLADE	21.00
KAMPFGRUPPE	39.00
KARATE KID II	28.00
KARATE KING	19.00
KARTING GRAND PRIX	19.00
KINDERAMA	32.00
KINDWORDS	63.00
KING OF CHICAGO	35.00
KINGDOMS OF ENGLAND	30.00
KRISTAL	30.00
LANCELOT	26.00
LAS VEGAS	19.00
LATTICE C 5.0	204.00
LAZERSCRIPT	29.00
LEADER BOARD DUAL PACK	21.00
LEATHER GODDESSES	26.00
LIGHTS, CAMERA, ACTION	51.00
LINKWORD LANGUAGES	19.00
LION'S FONTS	54.00
LRDS OF THE RISING SUN	31.00
LOTTERY MAGIC	18.00
LURKING HORROR	28.00
M	155.00
MAGELLAN	117.00
MAGIC JOHNSON BASK.	30.00
MANIC INVADERS	19.00
MARBLE MADNESS	35.00
MASTER TYPE	28.00
MATH MAGICIAN	28.00
MATH TALK	35.00
MATH TALK FRACTIONS	35.00
MATH WIZARD	32.00
MAVIS BEACON TYPING	35.00
MAXIPLAN 500	94.00
MAXIPLAN PLUS	126.00
MEAN 18	28.00
MENACE	28.00
MICROBOT DESIGN DISK	22.00
MICROFICHE FILER PLUS	108.00
MICROLAWYER	38.00
MIDI MAGIC	92.00
MIMETICS UTILITIES 1	40.00
MINI PUTT	24.00
MISSION CON-BAT	29.00
MISSION ELEVATOR	32.00
MODELER 3D	88.00
MOEBIUS	41.00
MONEY MENTOR	61.00
MONOPOLY	24.00
MOVIE CLIPS	21.00
MOVIESETTER	63.00
MULTI-FORTH	56.00
MUSIC MOUSE	50.00
MUSIC STUDENT	35.00
NEUROMANCER	27.00
OBLITERATOR	28.00

OF THE FLESH	24.00
ONE ON ONE	14.00
ONLINE PLATINUM	60.00
OPERATION WOLF	24.00
OPTICKS	120.00
ORGANIZE	63.00
OUTRUN	29.00
PAPER BOY	30.00
paGE STREAM	138.00
PAGEFLIPPER + F/X	94.00
PALADIN	28.00
PEN PAL	90.00
PERFECT SCORE	55.00
PERSECUTORS	13.00
PHANTASIE III	28.00
PHASAR 3.0	56.00
PHOTON CELL ANIMATOR	104.00
PHOTON PAINT 2.0	90.00
PHO. PAINT SURFACE DISK	18.00
PIONEER PLAGUE	24.00
PIXELSCRIPT	66.00
PIXMATE	44.00
PLATOON	28.00
POPULOUS	36.00
PORT OF CALL	32.00
POWER WINDOWS 2.5	62.00
PRINTMASTER +	32.00
PRISON	24.00
PRO ASM	66.00
PRO BOARD	355.00
PRO NET	355.00
PRO SOUND DESIGNER	98.00
PRO VIDEO PLUS	179.00
PRO. DATARETRIEVE	195.00
PROFESSIONAL PAGE	240.00
PROJECT D	32.00
PROWRITE 2.0	78.00
QIX	21.00
QUADRALIENS	18.00
QUARTERBACK	48.00
QUESTRON II	32.00
RAMPAGE	24.00
RAW COPY	36.00
RISK	24.00
ROAD RAIDERS	24.00
ROADWAR 2000	28.00
ROADWAR EUROPA	31.00
ROCKET RANGER	35.00
ROGER RABBIT	27.00
ROMANTIC ENCOUNTER	28.00
RUSH'N ATTACK	28.00
SARGON III	35.00
SCRIBBLE PLATINUM	90.00
SCULPT 3DXL	99.00
SCULPT/ANIMATE 4D JR	99.00
SEX VIXENS	24.00
SHANGHAI	28.00
SILENT SERVICE	28.00
SINBAD & FALCON	35.00
SKY CHASE	27.00
SLAYGON	28.00
SONIX	49.00
SOUND QUEST	CALL
SOURCE LEVEL DEBUGGER	56.00
SPACE STATION OBLIVION	29.00
SPEEDBALL	24.00
SPELLER BEE	35.00
STARGLIDER II	28.00
STELLAR CONFLICT	28.00
STELLARYX	24.00
STREET CAT	27.00
STRIP POKER II	24.00
STUDIO MAGIC	63.00
SUB BATTLE	27.00
SUPERBACK	48.00
SUPERBASE PERSONAL 2	87.00
SUPERBASE PRO	207.00
SUPERPLAN	99.00
SUPERSTAR ICE HOCKEY	35.00
SWORD OF SODAN	30.00
SYNTHIA	69.00
TARGIS	24.00
TAX BREAK	48.00

TECNOCOP	29.00
TELEGAMES	22.00
TELEWARS	28.00
TERRORPODS	28.00
TEST DRIVE II	27.00
TEXTPRO	53.00
THE ACCOUNTANT	190.00
THE THREE STOOGES	35.00
THE WORKS PLATINUM	178.00
THEXDER	26.00
THUNDERBLADE	30.00
TIME AND MAGIK	26.00
TITAN	27.00
TRACER	22.00
TURBO SILVER	115.00
TV SPORTS FOOTBALL	29.00
ULTIMA IV	41.00
UNINVITED	35.00
UNIV. MILITARY SIM.	30.00
V.I.P.	30.00



CALIFORNIA ACCESS CA-880

NEW LOW PRICE

$139.00

VIDEO EFFECTS 3D	130.00
VIDEO TITLER	88.00
VORTEX	24.00
WAYNE GRETZKY HOCKEY	30.00
WORDPERFECT	145.00
WORLD CLASS LEADER BD	28.00
WORLD TROPHY SOCCER	30.00
X-CAD DESIGNER	90.00

Super Special

A501 CLONE

$119.00

512K MEMORY
With Clock/ Calendar

HARDWARE

8 UP 0K	179.00
8 UP W/2 MEG	489.00
8 UP W/4 MEG	CALL
8 UP W/6 MEG	CALL
8 UP W/8 MEG	CALL
ADAPTEC 4000	126.00
ADAPTEC 4070	170.00
AIR DRIVE EXT.	149.00
AIR DRIVE INT.	139.95
AMIGEN GENLOCK	156.00
APRODRAW 12 X 12	480.00
C LTD REPLMNT KYBD	98.00
C LTD HARD DRIVES	CALL
CALIFORNIA ACCESS	149.00
C LTD KRONOS SCSI	CALL
C LTD SCSI 500	156.00
C LTD SCSI 1000	180.00
C LTD SCSI 2000	119.00
CM 20 MEG A500/A1000	639.00
CM 20 MEG A2000	539.00
CM 40 MEG A500/A1000	799.00
CM 40 MEG A2000	749.00
CM 65 MEG A500/A1000	879.00
CM 65 MEG A2000	799.00
CM 85 MEG A500/A1000	850.00
CS-1 COPY STAND	62.00
CVIEW 1	35.00
CVIEW 2	35.00
DELUXE MIDI INTFCE	63.00
DIGI-DROID	62.00
DIGI-VIEW 3.0	139.00
DIGI-VIEW GOLD	139.00
ECE MIDI	50.00
EPYX 500 XJ JOYSTK	14.00
ERGOSTICK JOYSTK	18.00
FLICKER FIXER	510.00
FLICKER MASTER	12.00
FRAMEGRABBER	529.00
FUTURE SOUND	136.00
FUTURE SOUND 500	99.00
GEN ONE GENLOCK	699.00
GO 64	24.00
GO 64 INTERFACE CABLE	15.00
GVP 68030 BOARD	CALL
GVP 68030 W/68882	CALL
GVP 68030 W/4 MEG	CALL
GVP 20 MEG HARDCARD	575.00
GVP 30 MEG HARDCARD	698.00
GVP 45 MEG HARDCARD	816.00
GVP AUTOBOOT EPROM KIT	29.00
GVP IMPACT A500	CALL
GVP A500 RAM MODULE	66.00
GVP SCSI/RAM A2000 0K 1M	294.00
GVP SCSI/RAM A2000 0K 2M	324.00
GVP SCSI/RAM A2000 2M	564.00
HARDFRAME 2000	257.00
HD-6A HARD DRIVE CASE	125.00
INBOARD 0K A1000	216.00
INBOARD 512K A1000	299.00
INBOARD 1 MEG A1000	349.00
INBOARD 1.5 MEG A1000	439.00
INBOARD 0K A500	239.00
INBOARD 1 MEG A500	349.00
INBOARD 2 MEG A500	489.00
MEGABOARD 2000 1 MEG	359.00
MEGABOARD 2000 2 MEG	479.00
MIDI GOLD A500	58.00
MIDI INSIDER A2000	65.00
MIDI STAR	216.00
MODEM CABLE A1000	15.00
MODEM CABLE A500/A2000	15.00
MOUSE MASTER	27.00
MOUSE PADS	9.00
NEC PINWRITER 2200	379.00
PERFECT SOUND	66.00

NEW MW 738
A500 POWER SUPPLY
$81.00

PERFECT VISION	189.00
PRO GEN GENLOCK	384.00
PRORAM 8 MEG W/2 MEG	489.00
SCSI CABLES	25.00
SEAGATE ST157N 48 MEG	439.00
SEAGATE ST225N 20 MEG	345.00
SEAGATE ST251N 40 MEG	440.00
SEAGATE ST277N 65 MEG	510.00
SEAGATE ST138N 30 MEG	394.00
SEAGATE ST296N 85 MEG	570.00
SPIRIT TECH. A500 512K 0K	44.00
STARDRIVE SCSI CONT.	102.00
SI COLOR SPLITTER	90.00
STARBOARD II 0K	260.00
STARBOARD II 512K	360.00
STARBOARD II 1 MEG	428.00
STARBOARD II 2 MEG	635.00
SUPER GEN GENLOCK	699.00
SUPRA 2400 MODEM	129.00
BRICK A500 POWER	102.00
TIMESAVER	55.00
VD-1 FRAMEGRABBER	920.00
VI-2000RF	78.00
VI-500RF	78.00
WV-1410 W/LENS,CABLE	238.00
X-SPECS 3D	94.00

Spirit Technology

A500 & A1000 Memory Expansion

Inboard 512K	$299.00
Inboard 1 meg	$349.00
Inboard 1.5 meg	$439.00
Inboard 2 Meg A500	$489.00

ORDER TOLL FREE
800-443-8[illegible]36

FEDERAL EXPRESS Standard Air Available on Request

Circle 403 on Reader Service card.

Computer Mart
105 Lynn St.
Nacogdoches, TX 75961
INFORMATION: 409-560-2826

SHIPPING INFO: Software rates are $2.10/item (Max8.00) UPS Ground or $4.00/item (Max 14.00) UPS 2nd Day Air. Call for Hardware shipping info. REFUND & RETURN POLICY: Defective merchandise under warranty will be repaired or replaced. Returned product must be in original packaging. We do not offer refunds for defective products or for products that do not perform satisfactorily. We make no guarantees for product performance. Money back guarantees must be handled directly with the manufacturer. All returns must have an RA #. Call 409-560-2826 for an RA. Returned products are subject to a 20% restocking fee. Prices subject to change without notice. Delivery subject to availability.

VISA MasterCard DISCOVER

fects are one-shots that disappear with the next mouse click, you can dump them to tape only, not capture them as a sequence or still images for further processing or incorporation into a longer presentation.

Switching between the inputs requires a trip to the menu bar. You can put a processed segment on tape but only in small pieces. If you have good editing equipment and do not mind having the final tape another generation removed from the original effect, the method works. The results, however, are far from smooth. Do not make the mistake of switching to the bottom input if no signal is present. The system will freeze. With both signals present, selecting both from the Camera menu produces two quarter-screen images of each input, like a checkerboard. This slows down the digitizing rate and makes movement rougher.

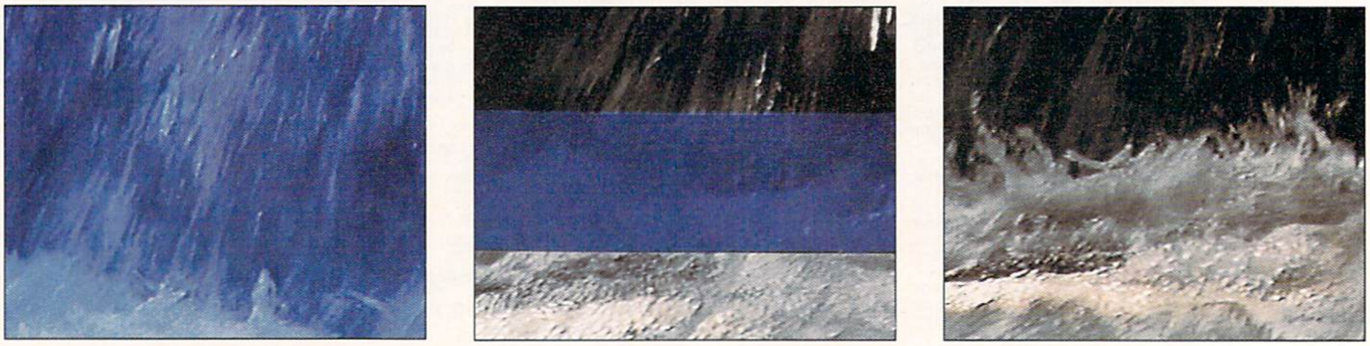
You fine-tune the image with the Video Signal selection or by pressing F6. Doing so adjusts the board's sensitivity to either the black-and-white or tri-color balances—a tricky business. You can make the adjustments while watching the image, but as soon as the color map or the mouse tinting changes, so does your careful adjustment. The best technique is to balance then capture, and try not to move the mouse in between.

THE PLAYERS

Invision (Elan Design, $129), soon to be updated to **Invision Plus** ($299.95), is the powerhouse that I use in place of LIVE!'s software. It operates in overscan only, and gives a choice between a 352-pixel- and a 368-pixel-wide screen for direct compatibility with DeluxePaint III (Electronic Arts, $149.95) and no visible border, respectively. The pre-release version of Invision Plus I tested captured and saved Anims directly, played them forwards or backwards, and mixed them with incoming video from either of LIVE!'s two sources, glitch-free. New effects include blanking, fade to black or white, stretch, squash, tumble, slide, zoom (to any section of the screen), paint, plus various combinations of insets, tiles, and mirrors. You can set the effects to serve as a transition between the two sources, going into the effect on one source and coming back from the other. The possibilities are mind boggling. In addition, you can designate a different Color 0 for genlocking with each preset by using the Key Color setting. You specify effects and color maps in advance on the preset editing screen, so be prepared for a fair amount of back-and-forth work to adjust the levels properly. Fortunately, the designers provided several environments full of presets tweaked for the smoothest color and movement. Use these as starting points and modify them as needed.

While its transitions are smooth as silk and virtually glitch-free, Invision does have some idiosyncrasies. If the video connection is broken, the program freezes with the image on the screen. Simply restore the connection; the program will resume operation. If you have a processor accelerator in your system, a timing conflict may make Invision unable to read the incoming video. When I changed my Creative Micro-Systems Inc. accelerator to 68000 mode, the problem was corrected. Finally, an incompatibility with some LIVE! boards causes Invision to display a split-screen squashed image. To correct this adjust a tiny potentiometer on the board; the technical staff at A-Squared will walk you through the procedure if you encounter difficulty.

Elan Performer (Elan Designs, $59) is Invision's smaller cousin. It cannot generate effects, but can display pictures and animations with incredible elegance. Most helpful to LIVE! owners, it can display LIVE!'s RIF format, and comes with tools to convert a RIF to two other animation formats: Invision's RIFF and standard Anim. By using the FrameCutter tool, you can separate any animation into individual frames and then reassemble them using RIFFSplicer or ANIMSplicer. LIVE! doesn't save its RIF with an icon, so you must run the FrameCutter from the CLI. Specify the RIF filename and the path to the save destination and select the Icons On option. If you have enough RAM (you will need at least 40K per frame), save the frames there. To use either of the splicer utilities, click on the icon of the first frame (they will all be numbered), shift-click on the rest in the order you want them spliced, then shift-click on the appropriate splicer icon. You can also change a ►



Even such simple effects as overlaying screens of color on live video can be very effective.

ATTENTION SUBSCRIBERS

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

IDG Communications/Peterborough
AmigaWorld
P.O. Box 58804
Boulder, CO 80322-8804

Please delete my name from mailing lists sent to other companies or organizations.

AmigaWorld

Name ____________________

Address ____________________

City ____________________

State ____________________

Zip ____________________

AmigaWorld
P.O. Box 58804, Boulder, CO 80322-8804

RIFF to an Anim by loading it and saving in the format you desire.

Zoetrope (Antic, $139.95) is a combination drawing, animation, and special-effects package that loads and saves (but cannot capture) RIFs. Its fatal flaw is that it only works in lo-res (320 × 200 pixels), making it of only marginal value when used with video. If you have a One-Meg Agnus chip, be sure you have version 2.01 or later of Zoetrope; earlier versions were incompatible with the chip.

An object-oriented animation program that works in any resolution or screen format, **Fantavision** (Broderbund, $59.95) will grab a frame from a video source through LIVE! and use it as a background. With the LIVE! libraries installed in the system, create a Movie (Fantavision's animation format), open it, then select Get Live from the Project menu. LIVE!'s requester will appear, allowing you to set video levels and genlock colors, and to grab a frame. Set the levels for a color balance as you would from within LIVE!, then select Grab Frame. Click the left mouse button to freeze the image for capture. Click on OK to import the frame into Fantavision as a background for your Movie. If the palette changes during the frames of the Movie, the background will change. Be careful: You still have all the image limitations of grabbing stills with LIVE!, so you may want to take the background into a paint program for retouching.

The Set

Even though all the players are on the same stage, they are not all playing in the same key. Before you can get them together, you must understand how they capture and save moving images. LIVE! saves animations in RIF format, a semi-compressed method that Zoetrope recognizes as well. Invision and Performer have their own version of RIF, called RIFF. RIFF files are much larger than RIF files on disk and even larger still when played back from RAM, because the format compresses less. In their favor, you can play RIFF files forwards or backwards. The emerging standard is the Anim format, which both Invision and Performer also support. Invision Plus saves sequences as Anims.

To give you an idea of the relative sizes of these formats, I captured a 24-frame, overscanned, tinted black-and-white sequence. In LIVE!'s RIF format it used 331K of space. When I eliminated the overscan using Zoetrope's utility, the size shrunk to 275K. The RIFF consumed 447K on disk, while a looping Anim required 366K. If RAM space is an issue, unpack the sequence and load the frames into a paint program, remove the video noise and any extraneous movements in the background, and make sure the palette is the same for all frames. An image processor works well for the latter. (For details, see "Global Operations," p. 112.) When you repack the sequence, you will find that its size has decreased substantially.

Keep in mind, if you are integrating the effect into a larger video piece, make sure you create it in Overscan mode. The result of mixing the video-standard overscan and with the Amiga's normal bordered display in the same piece is a jolt, to say the least.

Jammin'

The most straightforward way to use LIVE! is to route the signal from a tape or camera through it, manipulate the video in the program of your choice, and either watch the results or record them to tape. LIVE!'s software forces you to make regular trips to the menu bar, so I prefer using Invision Plus. Set up the presets systematically; assign related effects to the same mouse buttons and group similar color maps on adjacent clusters of keys. Use the key-map sheet provided to keep track of your assignments. For smoothest movement, avoid high resolution, which gives a shimmering, electric feel but jumpy animations. If you are sending your processed images to tape, keeping the color levels under 13 prevents bleeding when you transfer from an RGB to a composite signal. Make sure the output is interlaced, which will greatly improve the stability of the videotape for later editing and copying.

One of Invision's great features is the ability to mix captured Anims or still images with the incoming video. You can adjust the number of colors and placement (front or back) from the palette screen; just remember you are limited to 32 colors. With this technique, you can add variety to the flow of images. You could capture a sequence, then repeat it later in various forms as a motif. For example, grab a sequence, turn it into a non-overscanned RIF (using LIVE!'s RIFmaker and Zoetrope's Cropper), edit it with Zoetrope, save it as an Anim, and overlay it on the live video with Invision. If you keep the image simple and less than full frame, it will mix better.

Lighting is crucial, whether you are using a live camera, shooting to tape, or processing an already recorded tape. If an image looks grainy on tape, it will look even more grainy through LIVE!. Once you get comfortable with how the board handles different intensities of light, you can use the effects to your advantage. For example, when your subject moves into a shadow, it disappears to LIVE!. Concentrated spots of light appear as solid colors, reducing detail. Because of the rate at which LIVE! digitizes, fast movement through pools of light will appear with trails and moments of very vivid detail.

With the help of a genlock, you can add another degree of complexity to your images. Connect LIVE!'s pass-through to the video input of the genlock. Remember, when the incoming video signal is disrupted or degraded, the genlock's composite output will be as well. If your genlock has sliders for controlling the levels of video and graphics, you can mix the live signal with the LIVE! signal, controlling the intensity of each. You can tint the white foam of rushing water to red, for example, with a surprising

degree of accuracy by adding just a hint of the graphics in the mix. At this stage, you *must* view the images on a composite monitor to see the results and determine if the graphics palette is too saturated. Keep track of your experiments, the combinations of effects and sources, plus the colors and levels.

To keep the programs performing in concert, learn what they can and, more importantly, cannot do. Above all, keep in mind the display limitations of the system. Nothing looks worse than something pretending to be what it is not. While you cannot re-create all the sophisticated ADO effects on your Amiga, you can create visual effects that are startling, and effective. Small and subtle is often better than big and flashy. The eye often wants to be fooled into seeing something that is not really there. ■

Michael Hanish teaches at an adult education center, produces videos to help the homeless, and is a generally interesting guy. Write to him c/o AmigaWorld *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

AMIGA HERO

New Blood on the Block

SOMETIMES ALL IT takes to make money in this world is an Amiga, some imagination, and a little spare space in a house. At least this combination has produced cash for Larry Rosen, owner of the video postproduction firm LA Videograms, which operates out of Rosen's house.

One of Rosen's key areas of focus is made-for-video features, which are movies that bypass the glitz and glamor of the big screen and head straight to video rental and sales outlets. While these films do not have the budgets of an *Indiana Jones* or *Star Wars*, they still need a quality look and feel.

That's where Rosen and his Amigas come in. Rosen provides the off-line editing, which results in a computer-generated edit-decision list. That list then instructs the folks at a higher-end facility how to create the final product.

Rosen's Amigas do several other things. They create commercials, do storyboarding, titling, special effects, and logos. For example, Rosen did the opening title sequence for the Hollywood horror film *New Blood*.

Rosen's services are also available for those doing desktop video who lack the system to create the finished piece. With Rosen's help, a video can be spiced up with special effects, titling, and sound. He's just waiting for your call.

—Doug Barney

2-D Or Not 2-D. . .

A Good Question!

Programs such as DigiWorks 3D are handy for converting flat, 2-D graphics into 3-D objects.

By Harv Laser

AS ENTICING AS 3-D ray-tracing and rendering programs can be, designing 3-D objects is often a chore. No doubt it is immensely rewarding to concoct your own little "world" and populate it with super-realistic or fantastic objects, and even create stunning animations on your Amiga that only recently required a fortune's worth of hardware and software. *Executing* such feats, however, frequently turns into a long session of playing "connect the dots"—using different object editors in an attempt to create things that are not only pleasing to look at but also render well. For the uninitiated, you practically have to learn a whole new vocabulary to understand the functions of "polygons," "vertices," "edges," "faces," "splines," and other linguistic esoterica in the rendering-program repertoire.



Figure 1. With DigiWorks 3D, I extruded this flat image.

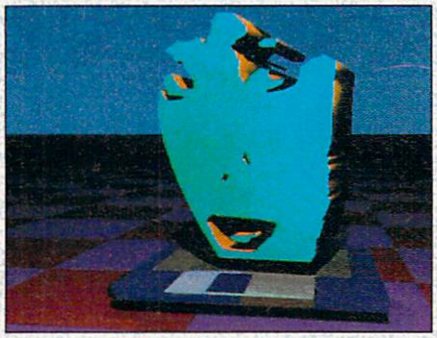


Figure 2. I then transferred the image to Sculpt-Animate 4D for ray tracing.

Lacking the time or talents to build objects from scratch, you can buy them commercially by the diskfull or download them from BBSs or networks. But even these resources won't help if you need to render custom objects—a client's logo, for example. What do you do?

If you can create your design in a paint program, or get it from paper into your Amiga by digitizing or scanning it, you can turn it into a flat or extruded object for ray tracing or rendering. The best program I have found for accomplishing this task is DigiWorks 3D (Access Technologies, $129.95; $30 additional for interlace version). There are other offerings in the field—for instance, 3D Options (Rainbows Edge Productions, $89.95)—but in my experience DigiWorks is far and away the best commercial program on the market. There are, of course, some excellent 2-D–3-D conversion utilities in the public domain and one of these, FontMaker 1.0, is discussed briefly in the sidebar "2-D To 3-D Via PD" accompanying this article. *(See Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)*

DigiWorks 3D

A VERY SMALL program (barely 40K on disk), DigiWorks 3D uses a clever mechanism (the "Heuristic Automatic Tracing Algorithm") to perform ►

edge-detection on any IFF picture you load into it.

On the Amiga, color pictures are made up of "bitplanes," which are basically screen layers. The more colors your picture has, the more bitplanes it uses. Once you load your picture into DigiWorks 3D, you can view the different bitplanes individually and choose the best one on which to have the program perform its magic. For DigiWorks 3D to do the best job with the least confusion, it helps to first reduce your picture to two colors (see "Object Lessons, No. 2 and No. 5 below).

Run DigiWorks 3D and use its intelligent file requester to load your picture. Immediately, the edge-detection phase begins as the program makes a determination as to what part of your picture is background and what isn't. Vertices or "points" will begin to appear around the perimeter of your design, and edges will connect them together. This "first pass" will probably not be perfect, as it usually results in too many, or superfluous vertices, and edges that aren't properly lined up. Too many vertices and edges will make a complex object that will increase memory usage and rendering time when you load it into your 3-D software.

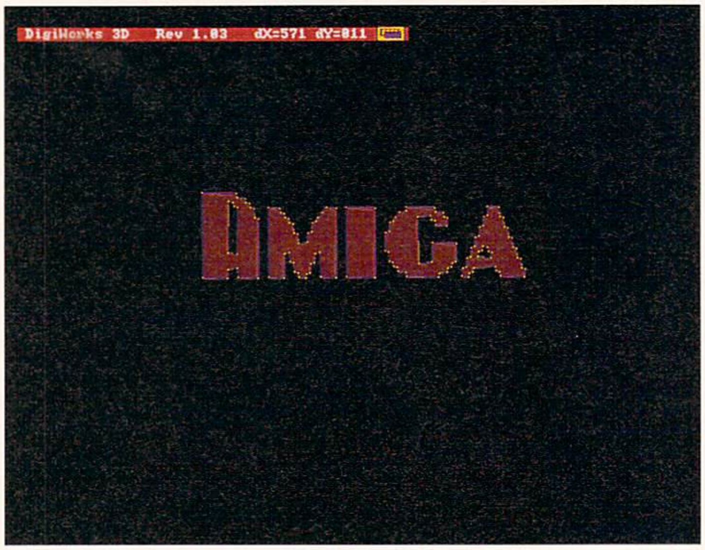


Figure 3. DigiWorks highlights every point on an edge.



Figure 4. By eliminating some points, you can smooth the surface.

Using DigiWorks 3D's excellent array of cleanup and design tools (selectable by menu or hot-key substitutes), you can add, delete, and move vertices and edges via the mouse. As each tool is selected, the mouse pointer changes shape to indicate which tool you are using.

The goal is to create a 3-D object with closed polygons, as this is what is required by your rendering software to properly deal with an object. DigiWorks 3D is intelligent but the edge-detection algorithm has its limits. Often, adjacent vertices are left unconnected. The program's tools give you the ability to "connect the dots" quickly to create those closed polygons you need.

While working on your object you can save in an intermediate "snapshot" file format. It's a good idea to save often, not because DigiWorks 3D is an unstable program (it isn't), but because invoking some processes in the program may produce results you didn't expect. The snapshot feature makes up for the lack of an "undo" option. Saving snapshots along the way makes it convenient to reload the last version rather than having to start from scratch.

By fiddling with the "closure" and "threshold" settings, you can tell DigiWorks 3D how close two vertices must be to be connected by an edge. Raising these parameters will cause more polygons to close, but it will also cause your object to lose fine detail because there will be fewer vertices and edges. With practice you will learn where to draw the line between making smaller, faster-rendering objects or larger, more complicated ones that slow down your rendering software and require more memory.

Once you have created an object, you can invoke different methods of saving it to disk. An object saved "unfilled" will render as flat or extruded edges, like a cookie-cutter outline. By using DigiWorks 3D's "extrude" and "poly fill" features, you can create solid objects that have depth and the appearance of mass. Another requester lets you modify both the face and side colors of extruded objects, leave them dull, or apply a shiny surface texture.

DigiWorks 3D can save an object in either Sculpt (Byte by Byte) or Turbo Silver (Impulse) format. To create objects for other rendering software, you will have to invest in an object-conversion program such as Syndesis' InterChange (see "Object Lessons, No. 6" below).

DigiWorks 3D really has only one major flaw: the lack of any zoom or magnification window. When creating an object, on screen it displays vertices as

single, bright yellow or white pixels, while representing edges by one-pixel-wide lines. Although they are relatively easy to see and to grab with the mouse, confusion may result when there are a lot of them on screen and you're trying to figure out which vertices are connected by edges and which aren't. A zoom or magnification mode would make the process go much faster. Access Technologies advises it has no current plans to add such a mode.

DigiWorks 3D is not copy protected; you can move it easily from its original disk to another floppy, a hard drive, or even your RAM: disk simply by dragging the program's icon into another disk's window. The program's excellent 50-page lay-flat manual covers all aspects of operating the software, a technical and hot-key reference guide, index, and four helpful tutorial sessions that are keyed to IFF-format example pictures on the disk.

Because the program itself is so tiny, rather than shipping a half-empty disk, Access also includes a slide show of some gorgeous ray-traced pictures created with objects made using DigiWorks 3D.

2-D to 3-D via PD

IN ADDITION TO commercial conversion programs such as DigiWorks 3D, there are some wonderful utilities available for the cost of a download from your favorite network or BBS, or on public-domain disk collections. Space prevents listing them all, but one new PD program deserves special mention: FontMaker 1.0 by James Rice of Anaheim, CA. (The requested shareware fee for private use is $10.) Although FontMaker is written in compiled Amiga Basic, it is still very fast and its interface contains a complete array of mouse gadgets. FontMaker creates unfilled, unextruded Sculpt-format objects; simply tell it which of your standard Amiga bitmapped fonts to use, type a line of text, and press the "process" button. The object is created and saved to disk. Load that object into Sculpt (any version), extrude and fill it using Sculpt's tools, and presto!, instant 3-D text objects. Convert it to other formats using InterChange. □ *—HL*

Object Lessons

HERE IN THE second part of our 2-D to 3-D conversions tutorial, we present some specific tips and techniques designed to help you create better-looking, more effective objects.

No. 1 It's important to remember when converting IFF to 3D that less complicated pictures will produce better 3-D objects. The more vertices, edges, and faces your objects have, the longer they will take to render, and the more memory your rendering software will gobble. To illustrate this, I typed "AMIGA" into a low-resolution DeluxePaint screen using a 30-point font.

In Figures 3 and 4, you can see that text image loaded into DigiWorks 3D's working screen. Figure 3 shows the picture immediately after DigiWorks 3D has performed its initial edge detection. Note that the program has highlighted the vertices on every "stair step." Saving the image as a Sculpt or Turbo Silver object at this point would have resulted in too many faces and a bloated object file. Figure 4 shows the results of manually eliminating many intermediate vertices. Not only are the sides of the object much smoother, but also they were rendered more quickly because the object files were much smaller and consumed less memory. The final result is shown in Figure 5, done with Sculpt-Animate 4D in full "Photo" mode.

No. 2 Your IFF source pictures can come from many places. Figure 1 shows a two-color reduction of a black-and-white picture of a girl's face created with FrameGrabber (Progressive Peripherals, $669.95), which captured it from a live television show. Figure 2 shows that same face, turned into a 3-D object in Sculpt format, extruded, and ray traced. The possibilities are limitless: You can create 3-D objects like this one from just about any flat design you can paint or digitize. Using Turbo Silver you could load the face object and map textures or another IFF picture on top of it (see "Putting a Shine on 'Silver'," p. 90), or using either Sculpt or Turbo ►

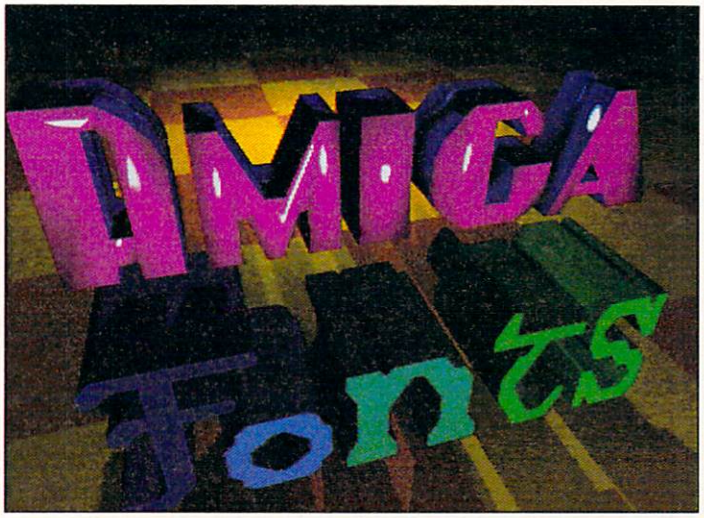


Figure 5. Our sample text incorporated into a Sculpt scene.

Silver, give it the attributes of glass or a mirror to reflect other objects.

The IFF example pictures on the DigiWorks 3D disk were made with Digi-View (NewTek, $199.95) and merely hint at some of the possibilities you can attain with a sprinkling of imagination and the right hardware.

No. 3 Currently, there is not enough intelligence in these converter programs to create something like a fully representational 3-D human head object with correctly positioned front, sides, top, and bottom. The extruded 3-D objects you can create at present are similar to the results of squeezing Play-Doh through a plastic stencil. Using tools provided in 3-D object editors such as Sculpt, Turbo Silver, Modeler 3-D, and others, however, enables you to smooth the sharp extruded corners of your objects in order to attain a more realistic representation of real-world objects.

No. 4 As you've heard or read many times, ray-tracing and rendering programs are very memory-intensive. Although DigiWorks 3D requires 512K and 3-D Options requires one megabyte of memory, the rendering programs usually require much more than that to deliver the best results. If you intend to get serious about ray tracing, solid modeling, or animation, buy as much memory as you can afford.

No. 5 An image-manipulation program, such as PIXmate (Progressive Peripherals, $49.95), Butcher (Eagle Tree Software, $37), or NewTek's Transfer 24 utility that comes with Digi-View ($199.95) and Digi-Paint ($99.95), will aid you considerably in massaging IFF pictures from one format to another, performing color reductions, or changing pictures from HAM to non-HAM modes. Most accomplished Amiga artists find these programs invaluable. (See "Global Operations," p. 112, for a discussion of image-processing programs.)

No. 6 InterChange (Syndesis, $49.95) is the best Amiga 3-D object converter currently available. It includes modules for converting between Sculpt and VideoScape formats; several inexpensive modules are also readily available to handle other formats. If you own more than one ray-tracing or rendering program, InterChange is something you shouldn't be without.

No. 7 Think about adding an accelerator board to your Amiga. A 68020/68881 board, such as the $1999 Commodore A2620 (which fits into a slot in an Amiga 2000 or comes standard in an A2500) will greatly reduce your trace times. Figure 4 took under an hour to ray trace on an Amiga 2500 using Sculpt-Animate 4D. Without the faster CPU and math coprocessor, you would need either to let such a picture "cook" overnight or to settle for a faster rendering mode while losing such nice effects as cast shadows or glass. The ability to create results quickly makes the whole process more interactive and entertaining, and will make you more productive. ■

Harv Laser is a SysOp of PeopleLink's Amiga Forum. Write to him c/o of AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

AMIGA HERO

Souped-up System

HEATHER MCINTOSH from CFTO-TV in Toronto, Canada is impressed with the work of her friend, Jeffrey Ginn. Heather wrote us a letter, and after talking with Ginn, we were impressed too.

Ginn, an art director for feature films, is not the easiest guy in the world to get a hold of. We finally convinced him to call us from Jamaica where he is working on a horror film called *Popcorn*.

Like many Amiga pros, Ginn has used the machine for a variety of things. One of his higher profile projects was an award-winning Campbell's Soup commercial that aired across Canada. The commercial was put together before there was a broad array of low-cost genlocks. Ginn cobbled together his own genlock system, and was then essentially locked in a room with three Amigas. Two weeks later (they let him out to eat, occasionally), Ginn had some 20–25 minutes of animation that he dumped to videotape. That animation, combined with video, turned into a wild 60-second commerical.

In the commercial, a computer has to decide whether it's better to eat Campbell's Chunky Soup with a fork or a spoon. This computer (an Amiga, of course) shows several displays and is quite adept at animation. Ginn worked with early versions of VideoScape 3D, DeluxePaint II, and Sculpt 3-D to do the animations, which were divided amongst the many screens.

The result was not only a masterpiece, but a second-place finish in the Gemini Awards, the Canadian version of our Cleos.

Ginn is now moving into new territories. Before jetting off to Jamaica, Ginn wrapped up work on *Stella Dallas*, a tearjerker starring Bette Midler. The Amiga did double duty on *Stella*. The Amiga 500 (it's easy to cart around) is attached to a plotter that uses razors instead of pens. This system cuts vinyl to make the signs that end up on film.

Ginn uses a modified version of Professional Draw, the Amiga 500 with two megs of RAM (Microbotics), a compact but high-resolution Sony monitor, and a Pacific Peripherals Subsystem 500 that allows him to use Amiga 2000 cards. This system is not only flexible, but it saves a tremendous amount of time and money because people no longer have to paint the signs. The Amiga also did a great number of the film's graphics.

That ain't all. Ginn has also begun modeling sets before they are built using his Amiga 500. Ginn creates a basic wire frame in Aegis Draw, then uses Interchange to bring the image into Modeler 3-D to generate the 3-D wire frame. He also just happens to have VideoScape running at the same time for rendering. We can't wait to see what Ginn cooks up next.

—***Doug Barney***

Global Operations:

Image Processing on the Amiga

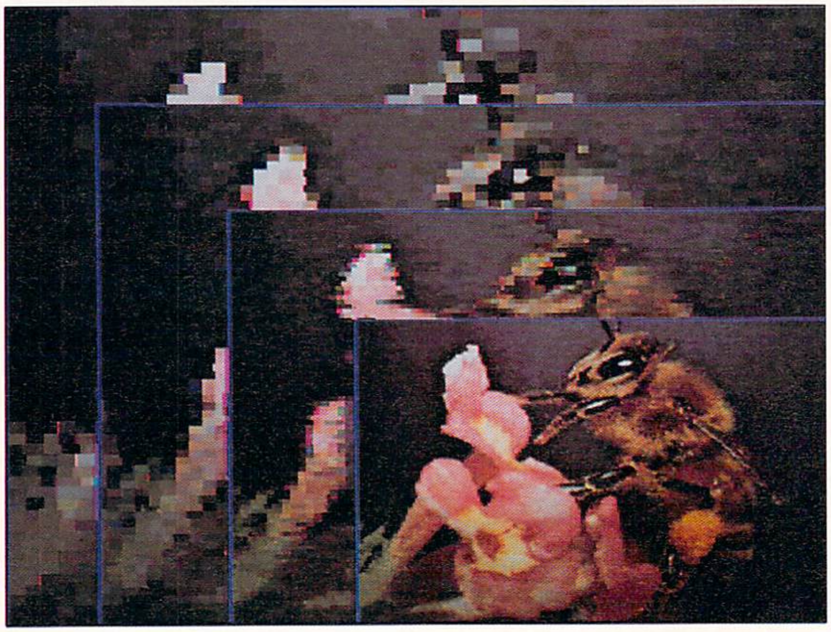
A fast, easy, and economical way to shift images between different display modes, adjust colors, and even make your own color separations.

By Roger Goode

SUPPOSE YOU WANT to put together picture elements from two different display modes. You can't do it. Sure, you can move a Lo-Res file into HAM, but you can't move it back the other way. And sometimes that's exactly what you need to do.

It's great having all these different modes to work in, but sometimes it can be a bit of a headache, too. Unless you plan to work with only one graphics program, and in only one display mode, you'd better keep a bottle of aspirin on your software shelf. Either that, or get an image processor.

Image processing puts you in complete control of the final output of all your graphics applications. If you use the Amiga for professional purposes, an image processor will quickly become an indispensable part of your graphics studio.



Currently, there are four image-processing programs available commercially: Butcher (Eagle Tree Software, $37); PIXmate (Progressive Peripherals & Software, $49.95); Colors (bundled with Electronic Arts' Deluxe PhotoLab, $149.95); and Transfer 24, which is bundled with NewTek's Digi-View ($199.95) and Digi-Paint 3 ($99.95).

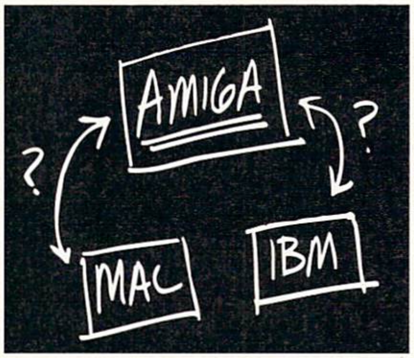
Although these are all graphics programs, they're not paint programs. You can't use them to draw, paint, or move things around. All of an image processor's operations are global in nature, affecting an existing picture in its entirety, rather than a touch here and a dab there. In fact, most of the operations are based solely on modifications to the palette.

Let's start by taking a look at how image processing can help with your graphics tasks; then we'll see what specific features each of the four available programs have to offer.

Putting an Image Processor to Work

The most valuable function of an image processor is its ability to change a graphics file from one of the Amiga's eight different display modes to another. When you're dealing with this many display modes, you'll quickly find the need to move files back and forth between formats.

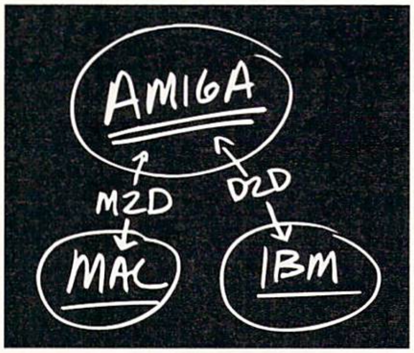
Let's say you're working on a simple black-and-white flyer for an upcoming event, and you're combining graphics and text. You've finished the graphics and now you're ready to add your text. The problem ►



PROBLEM

Your boss wants you to produce an animated video presentation to help sell that new project to top management. You know that a full-color, animated presentation, developed on the Amiga, using its powerful desktop video software, will make a convincing impact.

The Amiga is the right machine for the job, but how can you easily import the images and data you need for your presentation from other divisions of the company, data and images which come from Macintoshes and IBM PCs?



SOLUTION

File transfer programs MAC-2-DOS and DOS-2-DOS from Central Coast Software! Using these simple and easy-to-use Amiga programs, you can now quickly and easily transfer the Mac/IBM/Atari data and images you need to and from the Amiga.

MAC-2-DOS connects a Mac floppy drive directly to the Amiga • Reads and writes 400K/800K Mac disks • Converts MacPaint images to/from IFF • Imports Mac clip art for use on the Amiga • Converts ASCII text files both ways • Converts PostScript files both ways • Supports MacBinary format • Includes conversion utilities for PICT files and Mac fonts • Creates icons, as necessary • Formats 400K/800K Mac disks.

DOS-2-DOS uses your Amiga's floppy drives to read/write IBM/Atari 3.5-inch disks • Reads/writes 5.25-inch IBM disks (using an external 5.25-inch Amiga drive) • Converts ASCII text files both ways • Supports international character sets • Formats IBM/ Atari disks • Use with IBM program HIJAAK (from Inset Systems, not included) to capture/convert IBM graphic images to/from IFF.

MAC-2-DOS — ***when it absolutely, positively has to get to or from a Mac disk, immediately.***

DOS-2-DOS — ***when it absolutely, positively has to get to or from an IBM PC (or Atari) disk, immediately.***

And to preserve your entire presentation, all supporting data and graphic files, as well as the programs:

QUARTERBACK — ***the fastest and most reliable Amiga hard-disk backup program!***

CCS™

Central Coast Software™

424 Vista Avenue Golden, Colorado 80401
(303) 526-1030 • (303) 526-0520 (fax)

Circle 402 on Reader Service card.

MasterCard

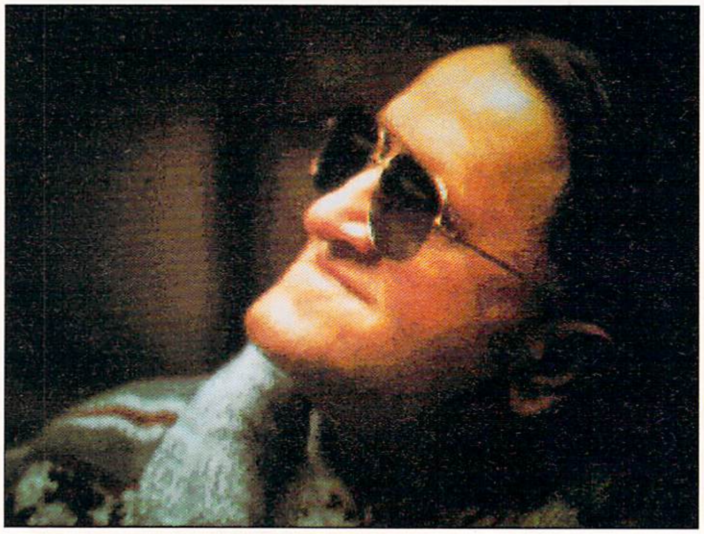
Dealer Inquiries Welcome

VISA

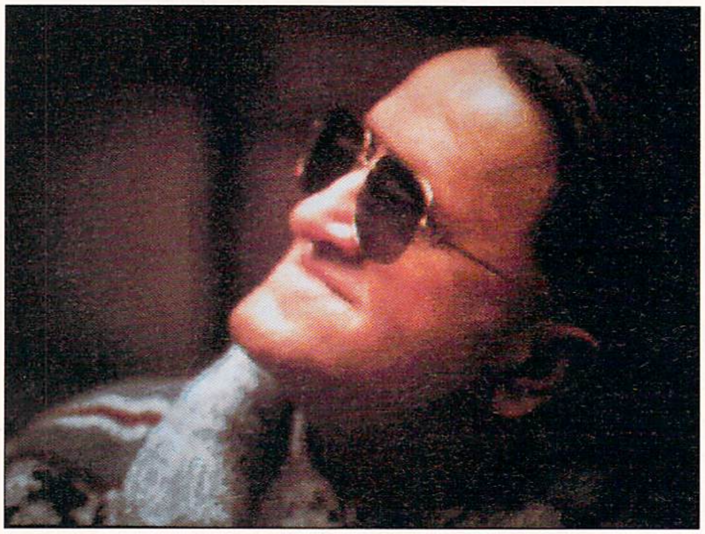
is that you created the graphic in low resolution, but working on your text in this resolution, you now discover that the lettering isn't going to fit in the space you've allowed, and on top of that, the font looks clunky and jagged.

Here's where the image processor comes in. With most image processors, it's simply a matter of pulling down a menu or clicking a couple of buttons to put the picture in high resolution, without changing its appearance. Now you can put in all the type you want, and it will look a lot smoother, too.

Changing to any of the other display modes involves the exact same operation. For instance, using our flyer example, let's say that it now needs to be twice as big, in full color, and with art picked up from another job you did a month ago. But that job was in Lo-Res Hold-and-Modify mode. First, load your image processor and enter Hold-and-Modify mode.



Before: An image digitized with Digi-View.



After: Colors were adjusted and brightness added using PhotoLab's Colors.

It takes just a minute to change the screen size with a few clicks. Now, load the file into a HAM paint program and go to work.

CONTROLLING YOUR COLORS

Another wonderful feature of image processors is color correcting. Although they all deal with it in a different manner, each of these programs allows global adjustment of red, green, blue, value (or intensity), and saturation levels. Using these controls makes balancing the colors of a digitized picture easy, and even fun. Do you have a picture that's too yellow? Just adjust the green down a few notches and add a touch of red, perhaps. Or maybe you have a picture that needs to be a little brighter overall; simply raise the value a hair and pump up the saturation. Your pictures will start looking the way you want them to, and without a lot of painstaking work.

An image processor can also consolidate colors and/or reduce the total number of colors in a picture. I often find that I have used all the available space on my palette, but still need to add a new color or two in order to place some brightly colored text in the picture, or for some other purpose. An image processor is ideal for rearranging the palette and sorting it in some logical manner that allows you to eliminate unnecessary or redundant colors. In fact, some of them will do the eliminating for you automatically, if you wish. Note that although you have totally reconfigured your palette, the appearance of the image on screen remains unaffected.

This can be a real boon if you want to use color cycling to add some last-minute animation. Because cycle ranges must be set up in consecutive order, it is simple to set them up at one end of your palette after you've sorted and eliminated a few colors. Desktop-video users will appreciate that Transfer 24 and Butcher even have special options for clearing the color zero to use with a genlock.

Along the same lines, an image processor will allow you to reduce or increase the number of bitplanes in a picture, thereby also reducing the number of colors. This is a must if you need compatibility with programs that accept only a limited amount of colors. Most of the programs are fairly successful at maintaining the integrity of the image despite the reduction of colors, but be prepared for some pretty drastic changes. At the extreme, you can use this technique to reduce a picture to two colors (one bitplane) for making printouts in black and white.

Remapping, or matching palettes with different files, is another useful image-processing function, allowing you to combine elements of two or more pictures without reworking all the on-screen colors.

COLOR SEPARATIONS

You can also use an image processor to do your own color separations. If you're doing high-end desktop publishing, there are services available that will make ►

four-color film from your Amiga files. All of the programs will easily change color pictures to black and white (gray scale), and produce negative images as well, in either color or black and white. With the exception of Transfer 24, you can also flip entire screens, vertically or horizontally.

This is not a complete list of what image processing can do for you, but these are the most important and useful functions that are common to each of these programs. Animators should have an image processor close by to keep all artwork in a standard format, regardless of the original source. And the color-adjust functions are a tremendous help in cleaning up digitized pictures for animations, or for any purpose.

Image-Processing Programs: How They Differ

Both PIXmate and Butcher are sold as stand-alone image-processing packages. These two have an entire set of additional functions that can make minute distinctions between many pixels according to mathamatical values. Using these abilities, both PIXmate and Butcher employ a variety of "filters" that perform edge detection and a number or other esoteric operations. Most of these functions are of little practical use for the artist. Also common to PIXmate and Butcher is the use of spare screens for trading information back and forth between two different pictures.

Using the Mosaic tool in both Butcher and Deluxe PhotoLab's Colors, you can create large pixel patterns to give a mosaic look to an image. This can be particularly effective with Butcher, which will allow you to "pixelate" with a variety of patterns, such as diamond, weave, knit, broken glass, and more. There's even an easy-to-use editing tool for creating an endless supply of other patterns as well. Butcher also provides a small set of basic drawing tools for minor touch-up jobs.

Working in HAM

Although I really like all the options offered by PIXmate and Butcher, both have one major failing: Neither is fully capable of manipulating HAM images. Both can display HAM pictures, convert HAM files to other formats, and vice versa, but beyond that, PIXmate limits you to manipulating only colors in the 16-base color registers, while almost all of Butcher's menu items are ghosted (turned off) when you load a HAM picture. If you want to work effectively in Hold-and-Modify mode, you have to turn to one of the other two programs: PhotoLab's Colors or DigiPaint 3's Transfer 24. These two do not have all the different filtering operations of PIXmate and Butcher, nor do they have some of the specific-purpose commands, such as Sort or Pack colors (although with a few more steps, some of the same results can be achieved), but they're both great at adjusting the color of your HAM pictures. Also, they both have the benefit of being bundled with paint packages.

The Artist's Choice

An image processor can turn some of your darkest nightmares into technicolor dreams. And with the amount of time you'll save fiddling with the palette on your paint program, you should be able to double your work output.

If I had to recommend one of these four programs over the others, I'd have to go with Deluxe PhotoLab's Colors. It's fully compatible with HAM, offers an interface that's easy to learn and use, and it provides a high degree of control that will satisfy the most discriminating user. *(See the Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)* ■

Roger Goode is Art Director of inCider *magazine. He uses Amigas extensively for graphics work. Write to him c/o* AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

AMIGA HERO

En-titled To Crow: Postproduction—Amiga Style

WE ASKED RICK Probst to list the high-profile TV and film projects his company has worked on. Probst could only remember some of them. The number of projects is outgrowing his ability to remember them all.

Probst's firm, Pacific Motion, is located in Burbank, California, the heart of the TV and film industries. But it takes more than an ideal location to land work on *Three Men and a Baby, Good Morning Vietnam, Shoot to Kill, Cocktail, Young Guns, Twins, Fly II, Stake Out,* and the TV game shows *Jeopardy* and *Wheel of Fortune*.

Along with partners Barbara Eddy (creative director) and Robert Visty (producer/director), and the Amiga, Probst produces trailer titles and storyboards.

Like many Amigans, Probst uses DeluxePaint III almost exclusively.

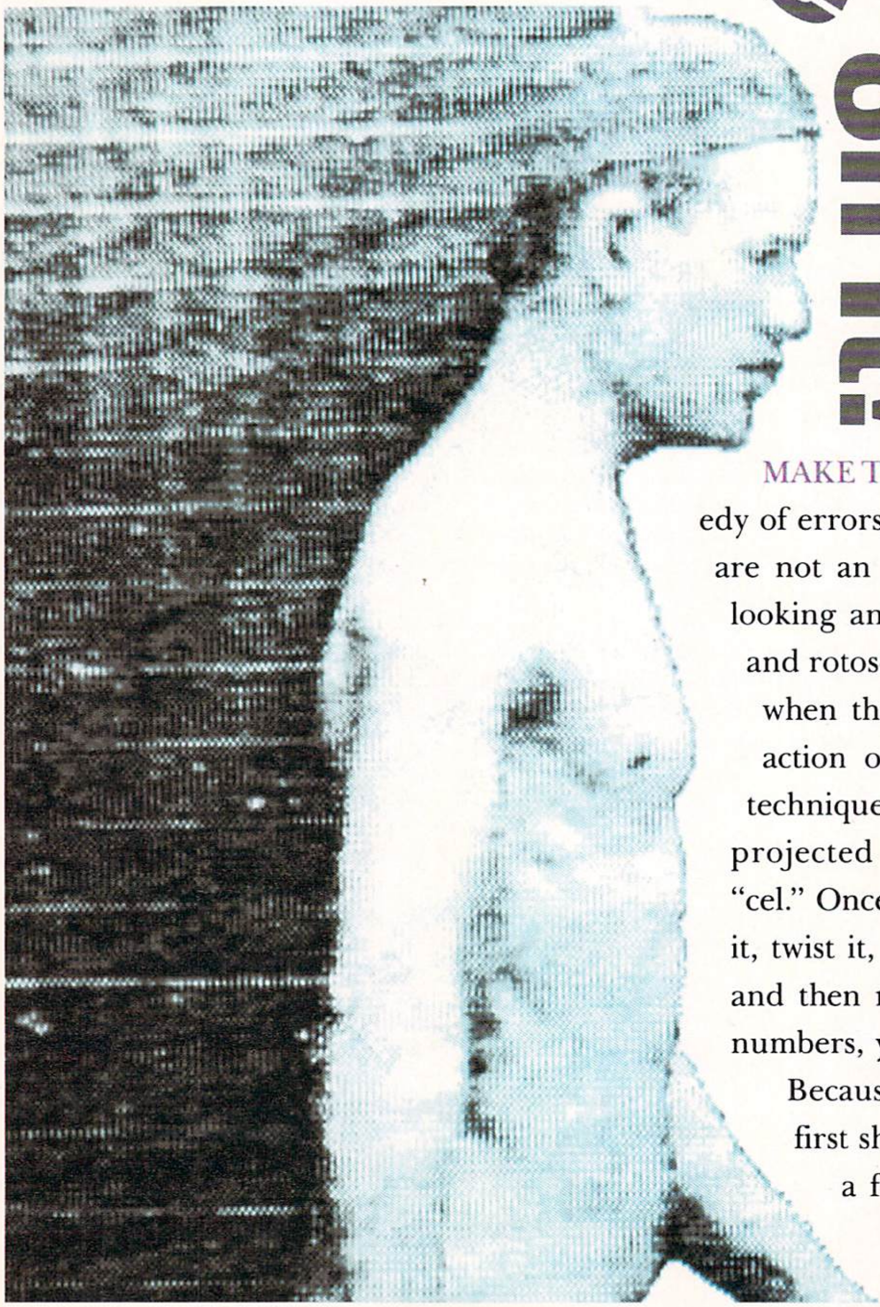
Rick produces the titles on an Amiga 2000 with the GVP 68030 accelerator board, six megabytes of RAM, and a SuperGen genlock.

Pacific Motion's latest project is the TV show *Rollergames*, a hopped up version of Roller Derby. Here Probst and crew did a broad array of graphics, including the main title, halftime graphics, and graphics to highlight grudge matches.

For most Pacific Motion work, the Amiga only does part of the job. It creates the titles and images, which are sent to postproduction using products like Quantel's $200,000 Paintbox, or Iris Wavefront workstations. While the Paintbox has 16 million colors, it does not have as many features as DPaint, Probst points out.

—Doug Barney

Put a Trace on It! Put a Tr



MAKE THE *SUBJECT* of your animation a comedy of errors, not the creation process. Even if you are not an artist, you can produce professional-looking animations through videotaping images and rotoscoping. An old trick that animators use when they need to capture the essence of an action or gesture quickly, rotoscoping is the technique of tracing the outline of a live object projected frame-by-frame onto an animation "cel." Once the image is captured, you can color it, twist it, bend it, combine it with new images, and then re-animate it. If you can paint by the numbers, you can rotoscope.

Because you need a "live" subject to trace, first shoot a reference videotape with you or a friend as the actor. With a genlock or digitizer, input the video picture from

You don't have to be a top-notch artist to create professional-quality animations. With an old technique called rotoscoping, it's as easy as a walk in the park.

By Gene Brawn

ace on It! Put a Trace

a VCR to the Amiga, ready for rotoscoping. Finally, use a paint program to create a fully animated, lifelike character from the video image. While you need not be a master painter to perfect this technique, some imagination and creativity are called for. Because you are drawing on existing, real-life images, you must add your own artistic touch to make your creation more than just a digitized movie.

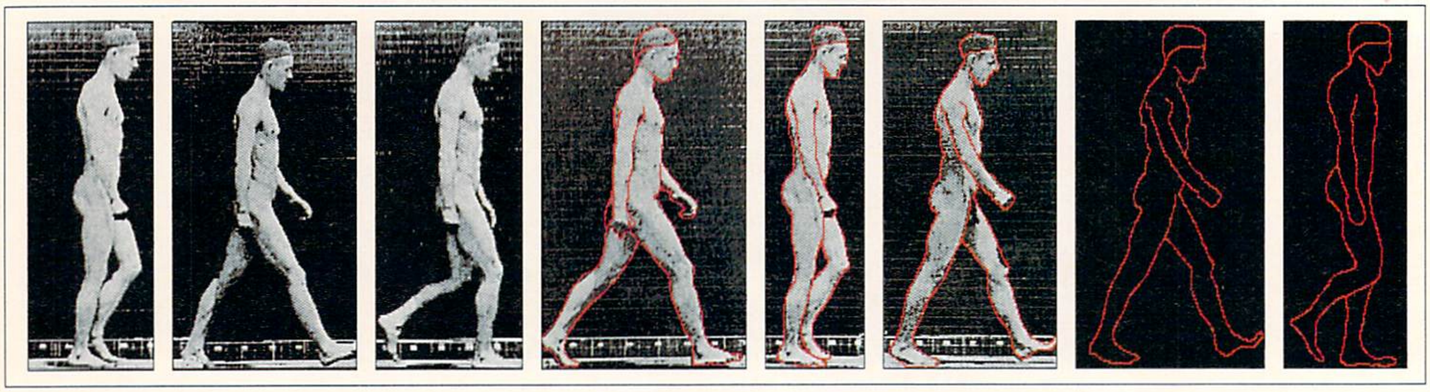
SHOPPING SPREE

You may already own all the video hardware you need. Almost any format video camera/camcorder combination will do. The format and quality of the video picture are not important because you will not be using the video image in the final animation. Any camera that produces a reasonably clear and sharp image will work for rotoscoping.

The type of VCR you use, however, is extremely important. Beg, borrow, or buy a VCR with a rock-steady still frame and a single-frame advance feature. Most new VCRs have a good quality still frame, but most home decks still lack a control to advance the video frame by frame. VCRs that do offer this feature usually have a large "jog" wheel on the control panel. Turn the wheel to adjust the slow-motion playback speed and direction of the video. I use a Panasonic AG-1960 ($1119), an industrial S-VHS editing deck, for my efforts. While it has no flying erase head, the AG-1730 Proline ($549) is also great for single-frame work. If you cannot afford to stock your studio all at once, many audio/video dealers will rent you everything you require.

On the computer side, you will need either a digitizer or genlock. For a digitizer, I use the FrameGrabber (Progressive Peripherals & Software, $699); it produces a clear picture from a VCR and it has a built-in Anim maker, perfect for this project. The pro-quality SuperGen (Digital Creations, $749.95) is a good genlock choice. If you need to cut price corners, though, do not worry about video quality from your genlock; remember, you are only tracing over the images.

For software, you will need a paint program and an Anim creation program. DeluxePaint III (Electronic Arts, $149, 1MB required) is the ideal tool; it combines both features in a single package. If you need the 4096 colors of HAM, Photon Paint II (Micro- ►



Trace your video images. . .

on It!

Illusions, $149, 1MB required) is an excellent all-in-one choice. For a good Anim maker and editor with tempting special effects, try ANIMagic (Aegis, $99.95, 1MB required).

With your equipment ready, the next thing you need is a plan. Animation is a long and often tedious process; you cannot afford to waste time on trial and error. Try to visualize each of the scenes in your mind, then sketch them on paper. Film makers and animators call this sketch a storyboard. A sequence of boxes with stick figures inside is usually enough to suggest the action. Use the storyboard to get a feel for the flow of your idea. Do the scenes follow logically and make sense?

Storyboards are also useful for estimating the amount of memory a particular motion or scene will consume. Do not commit yourself to a scene before you determine if it will fit in memory. As a guideline, a rotoscoped lo-res, full-screen animation of a man taking a single step occupies about 50K of RAM for 15 frames. This covers only one second of very simple animation! Keep your scenes short and do not go overboard with your camera work. Pans, tilts, and zooms are great for the movies, but consume too much memory for Amiga animation. Save your machine's precious memory for more character action and longer animations.

Ready When You Are, C.B.

With storyboard in hand, you are finally ready to shoot some videotape. If you find yourself "winging it" a lot when you are shooting, you have not planned thoroughly. If you are not sure about an idea, rehearse before you go on location. By acting out and timing your scenario, you will know beforehand if an action will work.

Shoot the live action against a solid background, preferably in a studio against a black backdrop. Tracing is much easier when extraneous details are not cluttering up the frame. The digitized frames will be much smaller, as well.

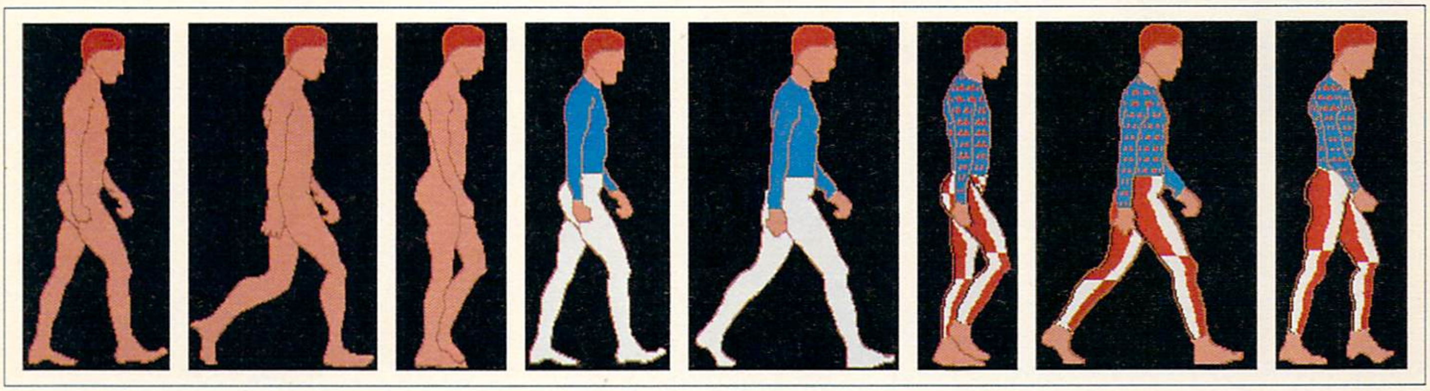
If you cannot access a studio, the black of night is an alternative, if you have good lights. Place your actor in an open space so that there are no objects visible in the background. If you light carefully, you can easily duplicate the black-curtain effect, even in your backyard.

If you do not have a lighting kit, use the great outdoors. Avoid shooting in direct sunlight, though; video cameras cannot handle too much contrast. As with snapshots, if you try to shoot your dark subject against the bright sky, the result on tape is usually a black blob. Shoot in the shade. Position your subject in front of a blank wall. Keep the detail in the background, and on your character, to a minimum. If you can, dress your actor in shades of gray. This will produce a cleaner digitized image and make tracing the figure much easier. Remember, you are adding the color later.

To save time in production, professional animators shoot on "twos," that is, shoot each cel twice on the animation stand. Because film runs at 24 frames per second (fps), the animator has to draw only 12 frames for each second of motion. You can use this technique to save memory. Video runs at 30 fps, which translates to a maximum frame rate of 15 fps. For example, a one-second video sequence of a character taking a single step would calculate to 30 fps ÷ 2 (every other frame) = 15 frames.

Think ahead. You will be manually tracing an outline for every frame you decide to use. More frames mean more work, so use only the number absolutely necessary to create the illusion of motion. If you are using the FrameGrabber and you have enough RAM, you can test the digitized sequence with the built-in Anim maker before you begin the tracing process.

Before you begin rotoscoping, watch your video to



. . .and then color in your outlines.

decide which sequences to animate. Set the counter on your VCR to 0 at the beginning of the tape. Review all your video and choose the best "take" of each sequence. Write down the counter numbers so you can find the scenes later. Time each sequence with a stop watch and write these down as well.

Borderline Work

Rotoscoping is a great tool. By tracing only the outline of a character, you distill just those movements absolutely necessary for animation. Later, you can play with the image in a paint program (I used DeluxePaint III for the example) to produce what appears to be a hand-drawn animated character. First, though, you have to input the video to the computer.

If you have a genlock, connect your VCR to feed the reference signal to it. Run DPaint III in two-color mode (1 bitplane). I normally use black for the background color and red for the drawing color. Now, superimpose DPaint III's screen over the VCR's video with the genlock. Move to the first frame you wish to trace and command the VCR to freeze the image. Outline the figure, perhaps adding additional lines to define the shirt, pants, and shoes. Work quickly, because most VCRs shut off the pause after a specified time to protect the video heads. Advance to the next animation cel and video frame and repeat the process. Be sure to back up your file often and test the animation as you progress.

Using the FrameGrabber adds the extra step of digitizing each frame. While more work, this method has the benefit of creating a permanent file of the original frames. You can easily make changes or reuse them later for another project. Because you are using the digitized frame as a reference, you do not need color. Save time, and disk space, by using the FrameGrabber in Black-and-White mode. Before you begin, set one of the palette colors to your tracing color and use the palette lock to force FrameGrabber to use this palette. (Value 14 is a good choice to change.) If you digitize all the reference frames with your drawing color set, you will not have to remap them later with the paint program.

As I said, do not waste time trying to get the perfect image; it only needs to be good enough to trace. Create the digitized frames in IFF Anim format by selecting Start Anim from FrameGrabber's Anim menu. Then, capture a frame and use the Add selection in the same menu to append the frame to the Anim file.

Load the completed FrameGrabber Anim into DeluxePaint III and you are ready to trace. Select the first frame, trace an outline of the image directly on the frame, advance to the next frame, then repeat the process. When you finish tracing all the frames, select the Stencil requester and lock the drawing color. Click the Clear item in the toolbox, and when the next requester asks if you want to clear the current frame or all frames, choose All. DPaint will then clear each frame. Because you protected your drawing color, the outlines you drew remain in each frame. Turn off the Stencil, and play your animation.

Painting and animating your character is where you get to be creative. You could leave your outline unchanged for really tiny Anims, but adding color is more fun. When you do, use a bold, flat style. Do not try to include all the detail you can see on the video; just suggest features. On the other hand, get crazy! Bend, fold, and spindle your character. Fill it with a wild pattern. Those thin little lines are the only thing to constrain your imagination. *(See the Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)* ■

Gene Brawn is a digital animator, graphics designer, and television director. Write to him c/o AmigaWorld, *Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Thanks to Audio-Video Supply for the equipment loan.

Help Frames

Answers to frequently asked questions about video and animation.

By Rick Rodriguez

Sync or Save?

Q: *I want to take images off of videotape. Will a genlock do this for me?*

A: No. This is one of the most prevalent misconceptions among new video producers. The genlock merely synchronizes the Amiga and your own video and allows you to key one on top of the other.

For the purpose of capturing images off of your videotape, you will need a video digitizer or frame grabber.

Look, and Grab Too

Q: *What should I look for in a frame grabber?*

A: There are basically two varieties of video digitizers—real-time and slow-scan. Digi-View ($199.95) from Newtek represents the latter and requires you to do several passes of the same image with different color filters. Real-time digitizers (frame grabbers) capture a video image in $1/30$ or $1/60$ of a second.

Generally, slow-scan digitizers provide a higher-resolution image than frame grabbers, but they are really intended for use with photographs or slides. Because slow-scan digitizers require a color-filtered black-and-white signal, you must be able to provide a perfect freeze frame and three separate red, green, and blue signals to capture a video frame. SunRize Industries markets a color-splitter device ($99.95) for use with Digi-View that takes a color signal and splits it into the three component colors. *(See the Company List on p. 128 for addresses and phone numbers of companies mentioned in this article.)*

Frame grabbers do not require you to freeze an image or split a color signal, but the performance of these units varies tremendously. On the low end, A-Squared's Live! ($295) can actually capture sequences of images in the form of RIFF animations, but the resolution is inappropriate for anything but highly stylized special effects. The VD1 from Impulse is a pricey ($1000) frame grabber that delivers the best resolution from any format videotape.

By Any Other Name

Q: *What is a frame buffer?*

A: A frame buffer is a peripheral device that can display graphics exceeding the resolution or color limitations of the Amiga. Presently, two companies market frame buffers for the Amiga. Both Mimetics' ($550) and Impulse's ($1000) products display 16.7 million colors. The Video Toaster from Newtek and the V-Machine from Digital Creations will, when finally available, feature frame-buffering capabilities.

The biggest limitation of today's frame buffers is that they will display only one image at a time. A 3-D program such as Sculpt-Animate 4D or Turbo Silver will generate a 24-bit file, which a frame buffer will display, but animating that display requires single-frame editing.

Getting in Sync

Q: *I can't afford to edit my videotape. Is there another way to synchronize my Amiga images with my videotape?*

A: The process of rapidly flipping from one graphic to another used to be a nightmare. When I first started using the Amiga at the television station, we could pre-load only three images at a time. If we tried to load different resolutions, the machine was sure to crash. And you could forget about animations!

Fortunately, new packages for the Amiga will now ease the burden of displaying a sequence of graphics. My favorite is Elan Performer (Elan Design, $59), which allows you to assign to the keyboard as many graphics and animations as your memory can hold. The graphics can be any resolution, including HAM, and the transition between key presses is almost instantaneous.

If you would like to avoid manually inserting your graphics, MicroIllusions' Time Code Reader/Generator (TCRG 102, $799) might be the answer. First, stripe one of your videotape's audio channels with SMPTE time code. Then create a simple list of graphics you want to insert and set the appropriate time-code numbers for the events to occur. When you play back the videotape, the time code will trigger the Amiga to load and display the appropriate graphics.

Poor Color

Q: *Why do my colors look so poor when I transfer images to videotape?*

A: The Amiga 1000's built-in composite encoder took a lot of flack precisely because of this problem. Take just about any beautiful Amiga graphic and record it, and it turned to mud! Although it's true the A1000's encoder wasn't the best, as it turned out, it usually wasn't to blame for the color bleeding and tearing most users saw in their videotapes. Commodore got rid of the composite signal in subsequent Amiga models, bu· the problem still remains.

A composite-video signal contains both color and brightness information. Raising the level of one of these ►

components beyond acceptable standards will adversely affect the other. A good rule of thumb is to never use colors that are more than 75% saturated (12 on a scale of 15). An over-saturated chroma signal will appear to bleed and will also affect the luminance of the graphic.

Don't Jump

Q: *My videotape tends to jump when I play it back. What am I doing wrong?*

A: You are probably seeing the results of recording a non-interlaced signal. The Amiga's flicker is a big sore point for the machine's detractors. That interlace flicker, however, is an indication of why the Amiga is the ideal video computer.

All television signals are interlaced, which means that raster lines are displayed in alternating odd and even passes. You may not notice this with moving video, but you will find it quite annoying with a still image.

Amiga videographers should limit their work to either high-resolution or interlace modes. If you need to record low- or medium-resolution graphics, get Mike Berro's public-domain program, SETLACE, or VTOT. Both programs will turn on the Amiga's interlace mode regardless of the screen being displayed.

If your image flickers wildly, you will have to adjust your color palette. Look for areas in your graphic where there are dramatic color contrasts. Reducing these contrasts will diminish flicker.

For video, it's a very good idea to work strictly in composite mode. The RGB monitor is easier on the eyes, but it can be very deceiving. Working with composite, you can concentrate on problem areas before it's too late.

3-D Logos

Q: *I want to take clients' logos and spin them around in three dimensions like I see on TV. Do I need a 3-D program to do this?*

A: Not at all. Most of the effects you're describing are not truly three-dimensional. Actually, they are a kind of 2½-D. Your two-dimensional logo is flipped and warped to simulate a third dimension, but the object itself has no depth.

A 3-D program must first contain your object's precise geometry—height, width, and depth—before it can manipulate it. When you spin this logo, you can see its top, bottom, sides, and back. That may sound appealing, but the trade-off is in speed and time. Inputting a 3-D logo can be torturous, and animating it for even 30 frames might take days.

A 2½-D program such as DeluxePaint III (Electronic Arts, $149.95) or ANIMagic (Sparta/Oxxi, $279) can animate your logo in seconds.

You're No Jerk

Q: *Whenever I make an animation, the speed seems jerky. What am I doing wrong?*

A: You're encountering one of the most serious limitations of RAM animation. The Amiga's architecture makes it capable of real-time animation playback. Even the most sophisticated super-computer animation is never displayed on the computer itself. Instead, the images are dumped to videotape one frame at a time.

Amiga software uses compressed formats like Anim to allow animations to be played back on your monitor without the intervention of a tape machine. Unfortunately, animations are limited by the amount of RAM in your system and the time it takes to redraw a screen. If you are moving only a small part of your screen, playback can approach 60 frames per second. If the entire screen is changing, however, playback can drop to below eight frames per second.

One work-around is to dump very small fragments of animation to videotape and edit these together to create a final sequence. If you can't edit, redesign your animation so that your animated object is smaller. Avoid moving the camera unnecessarily, as this generally means that the entire screen will be redrawn.

Several developers are now working on hard-disk-animation players. This will mean that the size of animations can equal the space available on your hard drive. Playback speed, however, will still be an issue. If the players can reproduce 15 frames per second, your animation will appear smooth enough for most purposes.

Exercise Control

Q: *What do you need to do single-frame animations?*

A: In single-frame recording, the accuracy of your videorecorder is very critical. Unfortunately, no industrial VTRs are capable of 100-percent accuracy. If you are serious about single framing, the Sony 9850 ¾-inch edit/recorder with time code is currently the lowest-cost alternative (approximately $7000).

Your animation program should be able to send a signal through its message port when it has completed rendering an image. That signal is received by controller software, such as MicroIllusions' Transport Controller, which then signals the VTR to record the graphic for a specified number of frames.

Off Center

Q: *I have difficulty centering my graphics. Although my RGB screen is centered properly, the graphics will jump from left to right when I videotape them.*

A: The centering of your RGB monitor is independent of your composite output. Use a reliable overscanning composite monitor and set Preferences to center your video output. This may result in your RGB image being off-center. You may adjust this somewhat by adjusting the centering on your monitor (the A1084 controls are in the back).

Once you have centered your Workbench properly, save the Preferences settings and always boot from this disk. If you must occasionally boot from different disks, you should adjust their Preferences also.

Overscan Anomalies

Q: *When I create an overscan screen in DPaint, I still get a border on the left side of the screen.*

A: Overscan on the Amiga is a kludge with which third-party developers have had to wrestle from the machine's inception. No two programs handle overscan in exactly the same way, and developers have yet to agree on standard overscan settings. (Overscan *will*, however, be standardized with the release of AmigaDOS 1.4.)

DPaint III gives you some hidden controls over the centering of your overscan screen. Holding down the CTRL key,

use the directional arrows to move your image in the appropriate direction.

The only program I have found that centers all overscan resolutions correctly is PIXmate ($49.95) from Progressive Peripherals. If you have centered your composite Preferences properly as outlined above (see "Off Center") PIXmate will take care of the rest.

Key Question

Q: *I want to place my live actor on top of an animated scene. How do I get my video source to sit on top of an Amiga graphic?*

A: Unfortunately, you cannot do this unless you have a professional switcher with luminance or chroma-key capabilities.

Amiga genlocks allow a predetermined color to be transparent so that a video signal may pass through. In your example, you would want your video signal to cut the hole.

Several forthcoming products promise to provide keying capabilities. A luminance keyer simply looks for the darkest areas in your picture and allows the video to pass through. A chroma keyer is more precise in that only a certain color (chroma-key green or blue) is replaced by your second source.

A Quickie Mickey

Q: *Which program allows you to create Disney-style animation with the least amount of drawing?*

A: It seems that anyone who attempts Amiga animation sets out to emulate the Disney look. Cel animation, however, is probably where the computer is least effective. This is not to say that you cannot create cel animations on an Amiga; it's simply that you will still have to do plenty of work to achieve an acceptable result.

Photon Video: Cel Animator (MicroIllusions, $149.95) was designed with the professional animator in mind. The drawback to this product is that it is intended for artists who originate their work on paper and digitize it into the computer. More tools for creating the drawings on the computer would be welcome.

Other programs do more to help animation along. Fantavision (Broderbund, $59.95) and Zoetrope (Antic, $139.95) offer special anamorphic capabilities that do some of the animating automatically. Zoetrope also features "blueing," which allows you to look at previous frames as you draw so that you can keep your artwork in registration.

Need a Break?

Q: *How do I break into the video-graphics business?*

A: Develop a reel of your work and send it around to local video producers, cable TV companies and TV stations. Make sure that the reel contains as many different looks as possible. Think about the market at which you are aiming. Obviously, with some businesses an animated pie chart will probably be more effective than a Cosmic Duck cartoon or a digitized sex-goddess animation.

Talk to local print-graphics shops; many of these are now acquiring high-end paint systems and also need help.

Become an expert, join a couple of national associations, attend SIGGRAPH or similar trade shows, but do not hesitate to swallow your pride and work for minimum wage as an intern. You will learn a lot and your reel will improve because it will include real-world applications. And who knows? The firm might like you and give you a permanent position. ■

AMIGA HERO

Video Guru

THE ACADEMY OF Cable Programming gives awards to cable stations and the people who run them. But in the case of recent ACP award winner Rick Rodriguez, maybe the Amiga should have shared center stage.

Rodriguez, a long-time Amiga video guru, runs Miavision, a Spanish-language cable station that serves the Miami area. He also happens to be the station's art director. The Amiga helps him to do both.

Miavision's six Amigas perform a number of functions. The award, however, was given for the station's local daily news program. Most of the graphics for the show come from, you guessed it, the Amiga.

It takes a lot of products to put out professional-quality programs. Rodriguez's mainstays include DeluxePaint III ("it's our number-one program"), Elan Performer for displaying graphics, PIXmate, which is also used for displaying graphics (it is particularly well-suited for displaying any resolution overscan graphics and keeping them centered), and Pro Video Plus for displaying text when the station is off the air. Pro Video also drives two ancillary public-access stations that Rodriguez also runs.

Miavision is just starting to exploit Turbo Silver to do truly sophisticated graphics. Unfortunately, due to the complexity of the tasks, Rodriguez cannot crank these images out as quickly as they would like.

While Miavision has nearly every Amiga font known to man, Rodriguez particularly likes Kara Fonts.

Rodriguez has done other high-profile projects with the Amiga. When Panamanian strongman (not Manuel!) Roberto Duran made a comeback fight in 1987 against Victor Claudio (Duran won), Rodriguez beamed the fight live via satellite. The Amiga was there too, in the truck, creating graphics and titles on the fly for the worldwide audience. There were fewer programs available in 1987, so Rodriguez used TV Text and a public-domain program to display the graphics. "Boy, that was rough," Rodriguez said.

Things went more easily a bit later when the Pope visited. Again, Rodriguez broadcasted live, but this time had the help of DigiPaint. Now Rodriguez has added ProVideo Plus and Elan Performer to his on-air arsenal. "It keeps getting easier," he said.

—Doug Barney



The Amiga lives up to its name at an all-Spanish cable station.

Resources and References

A guide to videos, tutorials, and publications

on Amiga video and animation.

ON DISK

PRODUCT	COMPANY	PRICE	DESCRIPTION
Deluxe Help Series:	RGB Video	$34.95 each	Interactive tutorials featuring narrated, visual demonstrations of functions in use on an active screen.
Advanced Techniques for DeluxePaint II			
Calligrapher		44.95	
Deluxe Paint			
Deluxe Paint II			
Deluxe Paint III			
DigiPaint			
PageSetter			
Photon Paint			
For Art's Sake	For Art's Sake	19.95	Create animations, ray tracing, with graphics packages.
Turbo Silver Texture Guide	Impulse	19.95	Guide to prefigured program modules.

PUBLICATIONS

PRODUCT	COMPANY	PRICE	DESCRIPTION
Amiga Desktop Video Guide	Abacus	$19.95	This book teaches basic terms to putting together a studio.
AV Video	Montage	30/yr.	Well-respected video magazine, but only light coverage of Amiga.
Becoming An Amiga Artist	Scott, Foresman	19.95	Book that teaches how to create charts, graphs, paintings, technical drawings, digitized images, animations, sound, and speech.
Inside Amiga Graphics	Compute Publications	18.95	Discusses suggested hardware and software to create a complete graphics system.
Mix	NBB Acquisitions	46/yr.	Magazine that covers the integration of sound and music with video and film.
Using DeluxePaint	Chilton Books	23.95	Tutorial for the beginner to the advanced.
Videography	PSN Publications	25/yr.	Tracks professional video across the country.
Video Magazine	Reese	15/yr.	Occasional Amiga coverage, but is an excellent source for information on consumer-level video gear. ►

PRODUCT	COMPANY	PRICE	DESCRIPTION
VideoMaker	Video Maker Inc.	15/yr.	Covers desktop video on a regular basis with several articles featuring the Amiga.
Video Systems	Intertec	4/issue	Limited Amiga coverage but in-depth articles.

VIDEO TAPES

PRODUCT	COMPANY	PRICE	DESCRIPTION
3D Cookbook	Byte by Byte	$24.95	Animation instruction using Sculpt-Animate 4D.
Color Cycling Animation	Cape Fear	39.95	Utilizing color cycling features of IFF paint programs.
Digitizing For Effect	Cape Fear	39.95	Capturing and transforming full-color images.
Director Tutorial Video	Right Answers	39.95	Comprehesive tutorial for this animation and presentation language.
DTV #4	Group M	30.00	Covers desktop-video hardware/software products.
DTV #5	Group M	30.00	Tips for running a profitable video studio.
Professional Techniques	Prism Computer	29.95	Demonstrates features of DPaint III, with tips for DPaint III techniques from Dan Silva (DPaint's author) and Jeff Bruette.
The World of Turbo Silver	VRS Media	24.95	An experienced user demonstrates the basics of 3-D object creation.
Video Graphics Techniques	Cape Fear	39.95	Introduction to video graphics. ■

Company List

Abacus
5370nd St. S.E.
Grand Rapids, MI 49512
616/698-0330

Access Technologies
PO Box 202197
Austin, TX 78720
512/343-9564

Accolade
550 S. Winchester Blvd.
Suite 200
San Jose, CA 95128
408/296-8400

Active Circuits Inc.
106 Highway 71
Suite 101
Mansquan, NJ 08736

Aegis Development
(now distributed by Oxxi)

AlohaFonts
PO box 2661
Fair Oaks, CA 95628

Amazing Desktop Brothers
66-16 N. Kenneth
Lincolnwood, IL 60646
312/679-7252

Amicore International
154 Grove St.
Chicopee, MA 10120
413/592-9122

Amigo Business Computers
192 Laurel Rd.
E. Northport, NY 11731
516/757-7334

A-Squared Distributions
6114 La Salle Ave.
Oakland, CA 94611
415/339-0339

American Software Distributors
RR 1 Box 290, Bldg. 3
Urbana, IL 61801
217/643-2050

Anakin Research
100 Westmore Dr., 11C.
Rexdale, Ontario
Canada M9V 5C3
416/744-4246

Antic Publishing
544 Second St.
San Francisco, CA 94107
415/957-0886

ARock Computer Software
1306 E. Sunshine
Springfield, MO 65804

ASDG
925 Stewart St.
Madison, WI 53713
608/273-6585

Bantam Books
666 Fifth Ave.
NYC, NY 10103
212/765-6500

Broderbund Software Inc.
17 Paul Dr.
San Rafael, CA 94903
800/527-6263
415/492-3200

Brown-Wagh Publishing
16795 Lark Ave.
Suite 210
Los Gatos, CA 95030
408/395-3838

Byte by Byte
Arboretum Plaza II
9442 Capitol or Texas Hwy. N.
Austin, TX 78759
512/343-4357

Bytes and Bullets
Rt. 3 Box 3532
Manchester, TN 37355

Cape Fear Teleproductions
605 Dock St.
Wilmington, NC 28401
919/762-8028

Centaur Software
4452 Redondo Beach Blvd.
Lawndale, CA 90260
213/542-2226

Charles Voner Designs
61 Clewley Rd.
Medford, MA 02155
617/396-8354

Classic Concepts
PO Box 786
Bellingham, WA 98227
206/733-8342

C Ltd.
723 E. Skinner
Witchita, KS 67211
316/276-6322

Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380
215/431-4200

Compute! Publications
PO Box 5406
Greensboro, NC 27408
919/275-9809

Computer Arts
PO Box 529
Opp, AL 36467
205/493-6312

Creative MicroSystems
19552 S.W. 90th Court
Tualatin, OR 97062
503/691-2552

Datel Computers
3430 E. Tropicana #67
Las Vegas, NV 89121
800/782-9110

Designing Minds Inc.
3006 N. Main
Logan, UT 84321
801/752-2500

Digital Creations
3944 Florida Blvd.
Suite #4
Palm Beach Gardens, FL 33410
407/622-0138

Discovery Software
163 Conduit St.
Annapolis, MD 21401
301/268-9877

Eagle Tree Software
PO Box 164
Hopewell, VA 23860
804/452-0623

Elan Design Inc.
PO Box 31725
San Francisco, CA 94131
415/359-7212

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

Escape Sequences Inc.
PO Box 1101
Troy, NY 12180
518/274-1547

Finally Technologies
25 Van Ness
San Francisco, CA 94102
415/564-5903

Free Spirit Software Inc.
PO Box 128
58 Noble St.
Kutz, PA 19530
215/683-5609

Gene Little Photo
PO Box 682
Rocky Hill, CT 06067
203/721-9308

Gold Disk
PO Box 789 Streetsville
Mississauga, Ontario
Canada L5M 2C2
800/387-8192
416/828-0913

Great Valley Products
225 Plank Ave.
Paoli, PA 19301
215/889-9411

Haitex Resources
PO Box 20609
Charleston, SC 29413
803/881-7518

Hash Enterprises
2800 E. Evergreen
Vancouver, WA 98661
206/693-7443

Impulse Inc.
6870 Shingle Creek Pkwy. #12
Minneapolis, MN 55430
612/566-0221
800/328-0184

IMSI
1299 Fourth St.
San Rafael, CA 94901
415/454-9678

IMtronics Inc.
12301 S.W. 132 Crt.
Miami, FL 33186

Inkwell Systems
1050 R-Pioneer Way
El Cajon, CA 92020-1943
619/440-7666

InnoVision Technology
1933 Davis St.
Suite 328
San Leandro, CA 94577
415/638-8432

Interactive MicroSystems
PO Box 1446
Haverhill, MA 01831
508/372-0400

InterActive Softworks Inc.
2521 S. Vista Way
Suite 254
Carlsbad, CA 92008
619/434-5327

Intracorp Inc.
14160 S.W. 139th court
Miami, FL 33186
800/468-7226

Intuitive Technologies
distributed by American
Software Distributions

JMH Software
7200 Hemlock Ln.
Maple Grove, MN 55369
612/424-5464

Joe's First Company
208 Glenayr Rd.
Toronto, Ontario
Canada M5P 3C3
800/387-8967
416/322-6119

JVC Professional Products
41 Slater Dr.
Elmwood Park, NJ 07407
201/794-3900

Kara Computer Graphics
6365 Green Valley Cr. #317
Culver City, CA 90230
213/670-0493

Kurta
3007 E. Chambers
Phoenix, AZ 85040
602/276-5533

Magnetic Images Company
PO Box 17422
Phoenix, AZ 85011
602/265-7849

Magni Systems Inc.
9500 S.W. Gemini Dr.
Beaverton, OR 97005
800/624-6465
503/626-8400

Meridian Software
9361 W. Brittany Ave.
Littleton, CO 80123
303/979-4140

MichTron
576 S. Telegraph
Pontiac, MI 48053
313/334-5700

MicroBotics Inc.
811 Alpha Dr.
Suite 335
Richardson, TX 75081
214/437-5330

Microft Software Ltd.
PO Box 1072
Exton, PA 19341
215/642-7638

MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
818/360-3715
800/522-2041

Micro Magic
distributed by Centaur Software

Micro Momentum Inc.
100 Brown Ave.
Johnston, RI 02919
401/949-5310

MicroSearch Inc.
9896 S.W. Freeways
Houston, TX 77074
713/988-2818

MicroWay
PO Box 79
Kingston, MA 02364
508/746-7341

Mimetics
PO Box 1560
Cupertino, CA 95015
408/741-0117

Mindware International
33 Alliance Blvd. Unit 1
Barrie, Ontario
Canada L4M 5R3
705/737-5998

Mix
PO Box 3714
Escondido, CA 92025

Montage Publishing
25550 Hawthorne Blvd.
Suite 314
Torrance, CA 90505

Neriki Computer Graphics
distributed by:
US:
Compu_Art
PO Box 712
Victoria Station
Montreal, Quebec
Canada H32 2V8
514/483-2080
514/737-5865

International:
Telmak Party Limited
Unit 12, 126 Queens Rd.
Five Dock, N.S.W. 2046
Australia 2065
02/0745-3466

NewTek
115 W. Crane St.
Topeka, KS 66603
913/354-1146
800/843-8934

Omicron Video
21822 Lassen St.
Chatsworth, CA 91311-3680
818/700-0742

Octree Software
311 W. 43rd St.
Suite 904
New York, NY 10036
212/262-3116

Oxxi Inc.
PO Box 90309
Long Beach, CA 90809
213/427-1227

Pacific Peripherals
PO Box 14575
Fremont, CA 94539
415/651-1905

Panasonic
1 Panasonic Way
Secaucus, NJ 07094
800/553-7222

Pangolin Laser Software
1016 N. Daniel St.
Arlington, VA 22201
703/527-4880

PAR Software
distributed by Brown-Wagh

PCM Industries
8330 Boone Blvd.
Suite 430
Vienna, VA 22180
703/356-4600 ►

Philadelphia Video Lab Inc.
338 Winding Way
Merion, PA 19066
800/333-0013
215/664-4955

Polar Arts
14145 Janna Way
Sylmar, CA 91342
818/362-8565

Polaroid
575 Technology Square
Cambridge, MA 02139
617/577-2000
800/343-5000

Prism Computer Products
distributed by:
Centaur
Electronic Arts
(video tutorials)

Progressive Peripherals and Software
464 Kalamath St.
Denver, CO 80204
303/825-4144

R & DL Productions
11-24 46th Ave. 2A
Long Island City, NY 11101
718/392-4090

Rainbow's Edge Productions
4412 4th Ave.
Brooklyn, NY 11220
718/965-1922

RGB Computer and Video Creations
3944 Florida Blvd.
Suite 102
Palm Beach Gardens, FL 33410
407/622-0138

Right Answers Group
Box 3699
Torrance, CA 90510
213/325-1311

Scott, Foresman and Company
1900 E. Lake Ave.
Glenview, IL 60025
312/729-3000

Sherreff Systems
15075 S.W. Koll Parkway
Suite G
Beaverton, OR 97006
503/626-2022

Silent Software
706 W. Broadway
Suite 202
Glendale, CA 91204
818/243-0313

Silver Software
1922 Purchase Brook Rd.
Southbury, CT 06488
203/246-2583

Silver Fox Software
PO Box 55143
Dallas, TX 75355
214/349-1681

Skyles Electric Works
213E S. Whisman Rd.
Mountain View, CA 94041
800/227-9998
415/965-1735

Slide City
6474 Highway
Deleon Springs, FL 32130
904/985-1103

Software Integration Solutions
11027 Twin Pond Terrace
San Diego, CA 92128
619/748-3350

Software Sensations
1441 S. Robertson Blvd.
Los Angeles, CA 90035
213/277-8272

Sony
1600 Queen Anne Rd.
Teaneck, NJ 07656
201/833-5200

Sparta Inc.
23041 de la Carlotta
Suite 400
Laguna Hills, CA 92653
714/583-2394

Spirit Technology Corp.
220 W. 2950 South
Salt Lake City, UT 84115
801/485-4233
800/433-7572

Sunrize Industries
PO Box 1453
College Station, TX 77841
409/846-1311

Syndesis
N9353 Benson Rd.
Brooklyn WI 53521
608/455-1422

T & L Products
2645 Wilson St.
Carlsbad, CA 92008
619/729-4020

Tangent 270
PO Box 38587
Denver, CO 80238
303/322-1262

Telmak Inc.
Box 54
Plainview, NY 11803
800/637-4540

Tensor Productions
280 Mathilda Dr. #9
Goleta, CA 93117
805/562-7480

The Dragon Group
148 Poca Fork Rd.
Elkview, WV 25071
304/965-5517

The Picture Box
8824 David Ave.
St. John, MO 63114
314/427-1869

Truvision
7340 Shadeland Station
Indianapolis, IN 46256
317/352-6120

True BASIC Inc.
12 Commerce Ave.
W. Lebanon, NH 03784
603/298-8517
800/872-2742

Unison World
1321 Harbor By Pkwy.
Alameda, CA 94703
415/748-6670

Video Magazine
PO Box 52255
Boulder, CO 80321

Video Systems
9221 Quivira Rd.
Overland Park, KS 66215

Videography
PO Box 513
Baldwin, NY 11510

VideoMaker
PO Box 3727
Escondido, CA 92025

Videomedia Inc.
211 Weddell Dr.
Sunnyvale, CA 94089
408/745-1700

VidTek International Inc.
2822 N.W. 79th Ave.
Miami, FL 33122
305/477-2228

Vision FX
382 University Ave.
Palo Alto, CA 94301

Vivid Produce Inc.
PO Box 127, Station B
Toronto, Ontario
Canada M5T 2T3
416/686-7850

VRS Media
11945 S.W. 123 Court
Miami, FL 33186
305/271-7643

William S. Hawes
PO Box 308
Maynard, MA 01754
617/568-8695

Xetec Inc.
2804 Arnold Rd.
Salina, KS 67401
913/827-0685

Zuma Group
6733 N. Black Canyon Hwy.
Phoenix, AZ 85015
602/246-4238 ■

AMIGA HERO

Putting the Viewer in Control

FANS OF THE TV show *Pee Wee's Playhouse* might not know it, but chances are they've seen Steve Segal's work. Unfortunately, Pee Wee did not have the foresight to enlist the services of an Amiga, so he put Segal to work doing hand-drawn animations.

Pee Wee may have neglected the Amiga, but Segal sure hasn't. Segal is a California-based animator who has worked on several projects that have received widespread distribution. For instance, his four-minute piece, entitled "Dance of the Stumblers," was included in the film *The Computer Animation Show*, and received international distribution.

The piece was done back in 1986 and 1987, when all Segal had was an Amiga 1000 with a scant 512K. Segal created some 200 separate files, and then recorded them onto videotape one after another. In order to give his distributor a 35mm version, Segal took the Amiga into an animation studio, and shot the 35mm version right off the screen.

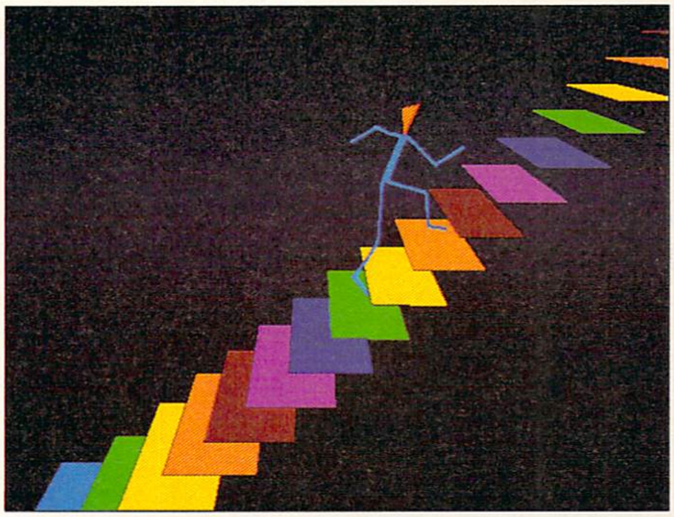
Segal has also used his Amiga to do scoreboard animation for a Labatt's Beer commercial.

Now as a consultant to American Interactive Media, a Philips Polygram Corp., Segal is involved in a whole new level of animation. Instead of the viewer watching passively as an animation unfolds, Segal is working on interactive animation, where the viewer controls the action.

These interactive projects will be released on CDI, an interactive version of a CD player that can also display images. (CDI players, expected to cost about a thousand dollars, have not yet been released.) All the viewer needs is the player, a video screen, and a joystick that drives the player. The interactive system will allow the viewer to have branching stories, and the ability to control the order of verses in a song.

The bulk of the animation for Segal's project is done on the Amiga. The interactive part, however, is programmed on Sun workstations.

Segal has done much of his work with Onion, an unreleased animation program from Silent Software. He also uses DeluxePaint III for coloring, and Sculpt-Animate 4D to generate 3-D backgrounds. Segal has also used Zoetrope to generate wire frames, which are animated with Onion.



Like many traditional animators, Steve Segal switched to the Amiga.

Although slower and more expensive, Segal also works with IBM-compatible PCs. When he gets to the final stages of a project, Segal moves his work to Autodesk Animator, a PC package that he uses to put the final pieces together and to do color work, such as color fades. Segal, however, tries to do as many phases on the Amiga as he can.

"Preplanning is essential," says Segal. "The tighter the storyboard, the smoother the production." He also advises users to understand how the computer stores information, so that storage space and processing time can be minimized. It is a good idea to start with a fairly friendly package like DeluxePaint III, and then move on to a more sophisticated and complex application like Sculpt. Once you know both "it is great to use them together," Segal noted. *—Doug Barney*

AMIGA HERO

Not By Mouse Alone

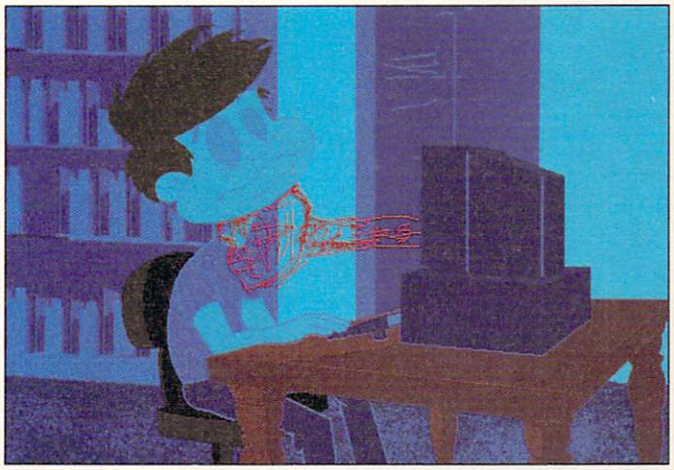
RUSTY MILLS IS an animator worth listening to. This eight-year veteran of the professional ranks has worked with the major animation studios, including Hanna-Barbera and Disney.

For most of that time Mills used the older, more conventional and tedious animation style, drawing each frame individually. He worked on the well-regarded full-length animation feature, *An American Tail*, which was "all done on paper."

That was then. The Amiga is now. Mills still does plenty of hand drawing. He believes animators should. But he also used an Amiga or two to create animations for children's programming and industrial videos. "It's faster and cheaper, and looks just as good," Mills said. Mills works for American Interactive Video, and his own L.A.-based firm, Newtoons Animations. Like many animators, Mills uses DeluxePaint III "about 90% of the time."

We asked Mills to come up with a few lessons for novices. Step one, according to Mills, is to take a conventional animation class, just to learn the basics. Prospective animators should also look at older cartoons to see what has been done.

Then it's time to start. The key is to start slowly; don't get "too grandiose" as Mills put it. "Keep it simple. Don't overdo it, or you will get discouraged." The budding animator should also learn the ins and outs of the software, and move forward in stages. Mills warns, however, that animators should avoid the shortcuts that sophisticated software offers. Instead, the artist should learn to draw it all; otherwise, it won't look right. *—Doug Barney*



One of Rusty Mills' eye-popping animations.

AmigaWorld is a publication of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 90 computer publications in 33 countries. Fourteen million people read one or more IDG Communications publications each month. IDG Communications publications contribute to the IDG News Service offering the latest on domestic and international computer news. IDG Communications publications include: ARGENTINA'S *Computerworld Argentina*; ASIA'S *Communications World, Computerworld Hong Kong, Computerworld Malaysia, Computerworld Singapore, Computerworld Southeast Asia, PC Review;* AUSTRALIA'S *Computerworld Australia, Communications World, Australian PC World, Australian Macworld*; AUSTRIA'S *Computerwelt Oesterreich*; BRAZIL'S *DataNews, PC Mundo, Micro Mundo*; CANADA'S *Computer Data;* CHILE'S *Informatica, Computacion Personal*; DENMARK'S *Computerworld Danmark, PC World Danmark*; FINLAND'S *Mikro, Tietoviikko*; FRANCE'S *Le Monde Informatique, Distributique, InfoPC, Telecoms International;* GREECE'S *Micro and Computer Age*; HUNGARY'S *Computerworld SZT, PC Mikrovilage*; INDIA'S *Dataquest*; ISRAEL'S *People & Computers Weekly, People & Computers Bi-Weekly*; ITALY'S *Computerworld Italia*; JAPAN'S *Computerworld Japan*; MEXICO'S *Computerworld Mexico*; THE NETHERLANDS' *Computerworld Netherlands, PC World Benelux*; NEW ZEALAND'S *Computerworld New Zealand*; NORWAY'S *Computerworld Norge, PC World Norge*; PEOPLE'S REPUBLIC OF CHINA'S *China Computerworld, China Computerworld Monthly*; SAUDI ARABIA'S *Arabian Computer News*; SOUTH KOREA'S *Computerworld Korea, PC World Korea*; SPAIN'S *CIMWORLD, Computerworld Espana, Commodore World, PC World Espana, Comunicaciones World, Informatica Industrial*; SWEDEN'S *Computer Sweden, Mikrodatorn, Svenska PC World*; SWITZERLAND'S *Computerworld Schweiz*; UNITED KINGDOM'S *Computer News, DEC Today, ICL Today, LOTUS, PC Business World*; UNITED STATES' *AmigaWorld, CD-ROM Review, CIO, Computer Currents, Computerworld, Digital News, Federal Computer Week, FOCUS Publications, inCider, InfoWorld, Macintosh Today, MacWorld, Computer + Software News, (Micro Marketworld/Lebhar-Friedman), Network World, PC World, Portable Computer Review, Publish!, PC Resource, PCGames, RUN, Windows*; VENEZUELA'S *Computerworld Venezuela*; WEST GERMANY'S *Computerwoche, Information Management, PC Welt, Run, PC Woche, RUN.*

Manuscripts: Contributions in the form of manuscripts with drawings and/or photographs are welcome and will be considered for possible publication. *AmigaWorld* assumes no responsibility for loss or damage to any material. Please enclose a self-addressed, stamped envelope with each submission. Payment for the use of any unsolicited material will be made upon publication. All contributions and editorial correspondence (typed and double-spaced, please) should be directed to *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-9471. **Advertising Inquiries** should be directed to Advertising Offices, IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458; telephone: 800-441-4403. **Subscription problems or address changes:** Call 1-800-525-0643 (in CO, 1-303-447-9330) or write to *AmigaWorld*, Subscription Dept., PO Box 58804, Boulder, CO 80322-8804. **Problems with advertisers:** Send a description of the problem and your current address to: *AmigaWorld*, 80 Elm St., Peterborough, NH 03458, ATTN.: Sue Kaniwec, Customer Service Representative.

List of Advertisers

Reader Service Number

* This advertiser prefers to be contacted directly

This index is provided as an additional service. The publisher does not assume liability for errors or omissions.

FYI

If you have any questions or concerns about advertisers in *AmigaWorld*, please contact: **Susan Kaniwec, Customer Service Representative, *AmigaWorld* Magazine, 80 Elm Street, Peterborough, NH 03458. As a service to its readers,** *AmigaWorld* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Through our customer service representative, *AmigaWorld* assists readers with problems they may have with advertisers. Readers are advised to contact *AmigaWorld* before dealing with these companies: **Computer Best, FutureSoft Applications. However,** *AmigaWorld* does not assume any liability for advertiser's claims.

BRiWALL BRiWALL

P.O. Box 129/58 Noble Street
Kutztown, PA 19530

24 Hour FAX Line 1-215-683-8567
Customer Service 1-215-683-5433
Technical Support 1-215-683-5699

CALL 1-800-638-5757

Outside the USA (1-215-683-5433)

VISA MasterCard

PLEASE COME VISIT US!
Monday - Friday 9AM-6PM EST
Saturday 9AM-12 Noon EST

HARD DRIVES			SCSI CONTROLLERS										
Drive Specs.	Manufacturer	Drive Price	C-LTD A2000 $140	Fastcard A2000 $151	Hardframe A2000 $251	Kronos A2000 $230	Trumpcard A2000 $159	Wordsync A2000 $169	FastTrak A500 $379	Kronos* A500 $384	Trumpcard A500 $223	FastTrak A1000 $338	Kronos* A1000 $421
32MB-28ms	Seagate-3.5	$351	$487	$496	$594	$574	$505	$516	$720	$717	$568	$680	$753
40MB-19ms	Quantum-3.5	$450	$586	$595	$693	$673	$604	$615	$819	$816	$667	$779	$852
44MB-25ms	Syquest-5.25	$684	$820	$829	$927	$907	$838	$849	$1,053	$1,050	$901	$1,013	$1,086
	w/Cartridge	$782	$918	$927	$1,025	$1,005	$936	$947	$1,151	$1,148	$999	$1,111	$1,184
48MB-28ms	Seagate-3.5	$385	$521	$530	$628	$608	$539	$550	$754	$751	$602	$714	$787
64MB-24ms	Seagate-3.5	$503	$639	$648	$746	$726	$657	$668	$872	$869	$720	$832	$905
80MB-19ms	Quantum-3.5	$750	$886	$895	$993	$973	$904	$915	$1,119	$1,116	$967	$1,079	$1,152
84MB-28ms	Seagate-5.25	$506	$642	$651	$749	$729	$660	$671	$875	$872	$723	$835	$908
100MB-19ms	Quantum-3.5	$794	$930	$939	$1,037	$1,017	$948	$959	$1,163	$1,160	$1,011	$1,123	$1,196
135MB-15ms	Imprimis-3.5	$1,231	$1,367	$1,376	$1,474	$1,454	$1,385	$1,396	$1,600	$1,597	$1,448	$1,560	$1,633

DRIVE PACKAGES

We have the technical sales staff and trained technicians to help you with a hard drive package purchase.

These package prices are complete. A500/A1000 packages include case and cables. (On packages with a "*" you can deduct $110 if you don't want the case and cable.) Amiga 2000 mounting brackets may be additional.

Drive installation is $15.

Many other package deals available!Please call -- M-F, 9-5 EST

MEMORY PACKAGES

	BOARDS	0K	512K	1MB	1.5MB	2MB	4MB	6MB	8MB
A2000	8-up! 1MBx1	$185	n/a	n/a	n/a	$391	$600	$808	$1,017
	Megaboard 256Kx1 150ns	$219	$287	$366	$446	$525	n/a	n/a	n/a
	Supra 1MBx1	n/a	n/a	n/a	n/a	$361	$570	$779	$987
A500	Starboard2 256Kx1 150ns	$269	$337	$416	$496	$621	n/a	n/a	n/a
	Minimegs 256Kx4 ZIP	n/a	$276	$379	$463	$546	n/a	n/a	n/a
	EXP-8000 1MBx1	$364	n/a	n/a	n/a	$583	$792	$1,000	$1,209
	Spirit Inboard 256Kx1 150ns	$229	$293	$372	$452	n/a	n/a	n/a	n/a
A1000	Spirit SIN 256Kx4 120ns	$252	$312	$380	$448	n/a	n/a	n/a	n/a
	Starboard2 256Kx1 150ns	$269	$337	$416	$496	$621	n/a	n/a	n/a
	Minimegs 256Kx4 ZIP	n/a	$276	$379	$463	$546	n/a	n/a	n/a
	Spirit Inboard 256Kx1 150ns	$229	$293	$372	$452	n/a	n/a	n/a	n/a

ELECTRONIC ARTS

Two essential programs for any serious Amiga desktop video developer.

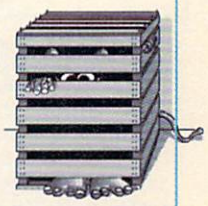
DeluxePaint 3 $99
DeluxeVideo 3 $99

AMIGA

Amiga 500, 2000 call
Amiga 2000HD, 2500 call
68020/68881 w/2MB call
2088XT Bridgeboard call
2086AT Bridgeboard call

WHY CHOOSE BRIWALL?

- ✓No Surcharge on Charge Orders
- ✓24-Hour Toll-Free Ordering
- ✓Our Fifth Year in Business
- ✓Fast, Friendly, Reliable Service
- ✓In-house Technical Support
- ✓A Fair Return/Exchange Policy
- ✓A "No-surprises" Shipping Policy



SATISFACTION GUARANTEED!

ACCELERATOR BOARDS
A3001-4MB/0 $2799
A3001-4MB/40Q $3149
A3001-4MB/80Q $3599
Hurricane 2800 w/030-882/25 1MB $1795
Infinity Machine call
Midget Racer w/68020 $349
Midget Racer w/68020-68881/16 $439

DRAW TABLETS
Kurta call
A Pro Draw 12x12 w/cursor $499
Easyl 500 $329

DRIVES (FLOPPY)
Chinon internal 3.5 $99
FlexiData FD-10 $139
FlexiData FD-20 $249
Twin Drive $259
UniDrive $145
UniDrive Enhanced $159

EXPANSION CHASSIS
Exp Chassis 500/1000 w/pwr $239
Subsystem 500 $249
Toolbox A1000 w/power $239

GENLOCKS
Amigen $99
Magni 4004 $1389
Magni 4004/4010 $1629
MiniGen call
ScanLock $895
SuperGen $669
SuperGen 2000 call

MIDI/SOUND
A.M.A.S. $135
Golden Hawk A2000 internal midi $75

MODEMS
Aprotek 2400 $79
Supra 2400 Internal (A2000) $135
Supra 2400 External $125
USR Courier 9600 Modem $659

MONITORS
Magnavox 515 call
Mitsubishi DiamonScan 14 $529
Moniterm Viking 1 call
NEC 3D $649

PRINTERS
Qume CrystalPrint Publisher $3349
(PS comp 300dpi w/ Weitek RISC chip)
Canon PJ1080A color ink jet $519
Cannon Bubble Jet $799
Everex Laser (HP comp.) call
Fujitsu LED Postcript call
HP PaintJet call
Laser Express $2199
Panasonic 1124 $359
Sharp JX-730 (wide color ink jet) $1859
Star NX-1000 Rainbow (color) $259

SCSI ERASABLE OPTICAL
Tahiti 1GB call
Panasonic 570MB (no cartridge) $3999
570MB cartridge $299
Sony 640MB (w/1 cartridge) $4599
650MB cartridge $329

SCANNERS
Han-D-Scan (width 4.13") $310
Cannon Scanner $949
Prof ScanLab w/Sharp JX-450 $4995
Sharp JX-100 call

VIDEO
Camera Lens 16mm - No Iris $22
Color splitter $89
Copy Stand with Lights $64
DigiView Adapter $16
Flicker Fixer $479
FlickOff $389
Frame Buffer Frame Capture (0K) $619
Frame Buffer Frame Capture (1MB) $749
FrameGrabber $529
Live! 500 $299
Live! 2000 $339
Panasonic WV1410 Camera $189
Rainbow 16mm Lens w/variable iris $49

SOFTWARE
AniMagic $69
Animator Apprentice $199
Broadcast Titler $199
Caligari Consumer $179
Deluxe Music Construction Set $65
Deluxe Paint Version 3 $109
Deluxe Photo Lab $99
Deluxe Productions $139
Deluxe Video 3* $99
Digidroid $69
Digipaint 3 $69
Digiview Gold A500/A2000 $139
Director $49
Director - Toolkit $29
Draw 2000 $169
Elan Performer $42
Express Paint V3 $89
Focus A2000 $119
Future Sound Sampler 500/2000 $103
Imagelink $299
Invision Plus* $209
Kara Fonts Color $55
Kara Headlines2, Subheads each $49
M Intelligent Music $139
MaterTracks Pro $275
Music-X $195
Opticks $69
Page Flipper Plus FX $99
Page Stream $129
Page Stream Dot Fonts #1-13 each $27
Page Stream PS Fonts A,B,C $27
Perfect Sound A500 $65
Perfect Vision $179
Photon Paint 2.0 $109
Photon Video Cel Animator $99
Pro Font I & II each $27
Pro Video Gold $199
Pro Video Font Sets 1,2,3 each $89
Professional Draw $139
Professional Draw Structures $42
Professional Page V1.2 (V1.3 soon) $249
Professional Page Template $42
Sculpt 3DXL $116
Sculpt/Animate 4D $389
Sculpt/Animate 4DJr $97
Sonix $52
Sound Oasis $69
Synthia PRO $252
Take Note $59
Texture Quest 2 $162
Turbo Silver $139
Video Effects 3D $139
Zoetrope $89

SHIPPING POLICY: ALL ORDERS received before 3PM EST will normally be shipped within 2 business days. All UPS shipments are sent Signature Required/No Driver Release. Add the following shipping charges to your Total software order.
UPS: Ground $4.50 (cont. USA ONLY); Air/Rush $8.00 (includes Puerto Rico/Hawaii); Overnight $12.00 + $2.50 PER ITEM (must be received by 12 Noon.)
Priority Mail: USA $4.50 (Includes APO/FPO); Canada/Mexico $7.00; Other Foreign $4.00 Handling + Actual Shipping + Insurance.
HARDWARE: Shipping charges for all hardware are $4.50 handling + actual shipping charges + insurance.

ORDERING INSTRUCTIONS: For your convenience, you can place a phone order 24 Hours/7 days a week on our TOLL-FREE LINE 1-800-638-5757. Outside the USA, please use (215) 683-5433. Price, availability, and compatibility checks are also welcome on our order line, Monday thru Friday, 9:30AM - 4:30PM EST. AFTER HOURS Orders Only Please! When placing an order, please specify your computer model, home & daytime telephone number, shipping address, charge card number, expiration date and name of bank.

ACCEPTED PAYMENT METHODS: We gladly accept Personal Checks (no holding), Money Orders, VISA, MASTERCARD, School Purchase Orders, or COD ($4.00 additional -- for established Briwall Customers ONLY). All checks must be in US Dollars and drawn on a US bank. There is no surcharge for credit cards and your card is not charged until we ship!
RETURN POLICY (for software and accessories ONLY): We have a liberal return policy to better service your needs. If within 15 days from the time you receive an item, you are not satisfied with it for any reason, you may return it to us for either a refund, exchange, or open credit. *refunds are subject to a 10% restocking fee per item returned* ($5.00 minimum per item.) Exchanges/Open credits will gladly be issued for the full purchase price of the item. DEFECTIVE items, Hardware items and Special Order items will be repaired or replaced with the same item only.
TECHNICAL SUPPORT (215) 683-5699, Mon - Fri, 9am - 5pm EST. We do our very best to help you with your product selections before you order, and after you receive your product. General questions, such as price, compatibility, etc.. will be handled by our order staff at the time you place your order. BUT, if you have specific, detailed questions about a product you will get the most help from our Technical Support Line.

S O L I D P R O D U C T S . . . S O L I D S U P P O R T

Circle 401 on Reader Service card.

InfoMarket

Elkon Enterprises

The Ultimate Hint Kit Vol.II

The Ultimate Hint Kit Vol.II is a new 3 disk package with more walk-thrus and maps and game editors. The Infocom chronicles disk has over 20 of the most popular and new Infocom game walk-thrus. With help for Battletech, Arthur, Journy and the Zork series. The walk-thru disk brings you help for Shadow Of The Beast, Maniac Mansion, Space Quest III and Police Quest. This disk has over 20 Walk-thrus plus Tricks And Tips Section. The Maps disk brings you maps for Bard's Tale II, Heros Of The Lance, Ultima IV plus more. These maps will guide you through the unknown. All of these great features for $19.95 Plus $2.00 shipping.

$19.95 Elkon Enterprises 4654 Mistletoe Wichita Falls Tx 76310 $19.95

AMIGA

500 repair $64.00

A500 Power Supply	$ 99.00	8372A (Fatter Agnus)	$ 99.95
A2000 Power Supply	159.00	1.3 ROM (315093-02)	29.95
A2000 Int'l Drive	99.00	M501 (512K)	125.00
A1000 Int'l Drive	159.00	8UP w/2 MEG	369.00

CALL FOR OTHERS

WE RESERVE THE RIGHT TO REFUSE WORK ON DAMAGED UNITS. DISCOUNTS FOR DEALERS & SCHOOLS.

AMPEX SYSTEMS, INC.
5344 Jimmy Carter Blvd.
Norcross, GA 30093
(404) 263-9190
Toll Free 1-800-962-4489

WE CARRY PARTS, CHIPS, POWER SUPPLIES & ALL OTHER ACCESSORIES FOR YOUR COMMODORE & AMIGA. AUTHORIZED AMIGA SALES & SERVICE.

ON THE AIR!

WITH YOUR OWN LOW-COST, FCC LICENSED TV STATION!

Don't miss out—Call or Write for FREE INFO

TOOTLEVISION BROADCASTING
2606-B So. Sheridan Rd.
Tulsa, OK 74129

1-800-332-LPTV
918-836-1120

MGH Soft • Box 645 • Bayfield, WI 54814 • 715-779-5600 24 Hours

Are you tired of paying $7.00 for a single public domain disk? You're in luck! We have over **350** Amiga PD disk—**Only $2.50 each postpaid!**

Try our superb 6 packs—Only $15.00 each postpaid!

Game Pak 1—6 disks of some of the best 512K games.
Game Pak 2—6 disks of impressive 1 MEG games.
Demo Pak 1—6 disks containing some of the best 512K demos.
Demo Pak 2—6 disks of AWESOME 1 MEG demos. **A MUST HAVE SET!**
Music Pak 1—6 disks packed with high voltage stereo ROCK music!

CALL NOW to order or request a copy of our free catalog. We want to be your PD source!

DeskTop Video Stock Art. . .

. . .for your Video Productions. Animals, people, money, cars, hundreds of subjects. Brushes, backgrounds, and "clip ANIMS." All in Interlace or Hi Res.

Quality, original, USEFUL art at low prices. Buy only the images you need.

"Seeing is Believing!" TRIAL OFFER $17.95

Video tape catalog of images, PLUS a sampler disk of pics and ANIMS for you to use freely. BOTH for only **$17.95**

Call to order or for more info: **1-800-752-5078**

Or send $17.95 to:* **NEWMEDIA, 6023 Kilgore Ave., Muncie, IN 47304**

* We pay S&H. Indiana residents add $.60 sales tax.

---

4 NEW SUPER AMIGA UPGRADES AMIGA™

SUPER (FATTER) AGNUS
1 MB chip RAM for music, graphics, or video. **$109.95** / simple 10 min. step/step instr.

V1.3 KICKSTART ROM
Latest upgrade out. **$27.95** / instr.

Send for free catalog of exclusive products.

512K RAM UPGRADE BOARD
Installs in A500 in 10 seconds. **$114.50**

UPGRADE AMIGA MEMORIES FOR EXPANSION BOARDS

68020/33	$140.00
68881/20	$105.00
68882/16	$105.00

And many others

1-800-292-7445 (toll free) Prices subject to change — OUR 9th YEAR

THE GRAPEVINE GROUP, INC.
35 CHARLOTTE DRIVE
WESLEY HILLS, NY 10977

(914) 354-4448
FAX (914) 354-6696
Dealer pricing available

Win $2000 worth of fresh Fish!

We're giving away the **entire Fred Fish Collection** (est. $2000 value) to one lucky member of the Amiga community, in order to promote KeyCraft™, our keyboard & mouse macro-maker for the Amiga. To enter, send a self-addressed, stamped envelope to: **SSI Free Fish Contest, PO Box 59800, Chicago, IL 60659.** One entry per person. No purchase necessary. Void where prohibited. Entries must be received by 4/15/90. **Good Luck!**

StraightLine Software Inc.
"The Shortest Distance Between Two Points"

4096 Color IFF-HAM

ADULT PICTURES

3 Disk Set $35

The Digital Pub / 257
1033 Peachtree Street NE
Atlanta, GA 30309

send for free info

You must sign a statement that you are 18 or over to buy these disks!

AMIGA Programmers Wanted!

The **AmigaWorld Tool Chest** has created a fantastic opportunity to publish new, uncirculated Amiga programs. If you've written something special for the Amiga, and would like to earn some extra money, please contact us for our Tool Chest Author Guidelines. Perhaps you'll be the next **Tool Chest Star!**

AmigaWorld Tool Chest Submissions Dept.

AmigaWorld Magazine
80 Elm St.
Peterborough, NH 03458

Make the most of your advertising investment! Reserve your space in the AmigaWorld InfoMarket today! Call Heather Paquette on the East Coast at 603-924-9471 or 1-800-441-4403. On the West Coast call Shelley Harmon at 415-328-3470.

FEMME FATALE

The digital puzzle for adults!

GOOD CLEAN ADDICTIVE FUN by Graphic Expressions

$34.95 ppd. cont. US NY & NJ add tax

All NEW and Featuring :

- 10 exquisite photos digitized in full color.
- 5 difficulty levels (25, 40, 64, 80 and 100 tiles).
- Digitized feminine audible assistance.
- Large, uncluttered full screen images.
- Load/Save game options, Hints, Undo, Status.
- Choose from our superb library of digitized data disks or use your own Low, Med., Interl. or Hi-res images.
- Demonstration disk & discount coupon available for only $2.00.



(Include a signed statement that you're 18+ years old).

GRAPHIC EXPRESSIONS
P.O.Box 110028 Nutley NJ 07110 USA (201)661-0408

Circle 447 on Reader Service card.

MAGNI

Broadcast Genlocks

❑ National Distributor

❑ Dealers Welcome

OMNI International Trading
3826 Woodland Park Ave N. Seattle, WA 98103-7927
TEL: (206)547-6664 FAX: (206)547-6012

Circle 439 on Reader Service card.

Video Visions

For Amiga Video or Color DTP — Your Software Service

Volumes 2-7 Sold Separate $24.95
THE TITLER SET = $79.95 = 11 Disks VV1=$34.95
THE ANIMATOR SET = $59.95 = 6 Disks
THE STUDIO SET = $199.95 = 19 Disks complete
Mini-Volumes = Cool Colorfonts, Borders =$16.95

2 Disks per Volume- for IFF Display Programs
VV1-The Titler (Backdrops-Fonts) = 4 disks
VV2-The 3D-Animator (Fantasy) = 3D Objects
VV3-The 2D-Animator (Characters)
VV4-The Videographer (Weddings)
VV5-The Broadcaster (Broadcast-Sports)
VV6-The Educator (World Maps)
VV7-The Advertiser (Products-Symbols)

" NOW UTILIZED IN MANY VIDEO BUSINESSES "

SERVICES INCLUDE: (Custom to Your Specs)
Slide Service - 16M color or Amiga Hi-Res
Desktop Publishing - Manuals or Design Work
Video Animated - Logos at Affordable rates.

CV Designs — Video -Slides Demos Programmed

CV Designs, 61 Clewley Rd. Medford MA 02155, 617-396-8354

MASTERPIECE PROFESSIONAL FONT COLLECTION©

20 DISK SET
The Largest Collection Of Fonts And Clip Art Available In A Single Package For The AMIGA.

100 DIFFERENT FONT STYLES
This doesn't mean 10 sizes of 11 fonts. It means 110 DIFFERENT Fonts.

LARGES SIZES • HI-RES
Specially Designed For Video Work. 95% of the fonts are over 100 pt. tall. Easily resized smaller.

PATTERN CLIP ART
141 hi-res DPaint II pages. There are thousands of objects and examples.

BRUSHES
2 Disks Full Of Color Brushes

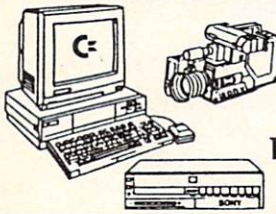
COLORFONTS
4 Disks Full Of Colorfonts

100 PAGE MANUAL
Full Size Font Printouts

20 DISK SET - ONLY $199.00
VISA / MC • COD • Company Check

Contact your local AMIGA dealer or order direct from AROCK Computer Software PO Box 731, Springfield, MO 65801 1-800-288-AROK

Video Production & Animation Recording Systems



- MediaPhile® Video Deck Controller
- MediaProcessor® Video Editing Software
- Genlocks, Digitizers, Scanners & SEG's
- SONY & JVC Video Decks & Camcorders
- Commodore-Amiga Computers

Interactive MicroSystems, Inc.
80 Merrimack St., Haverhill MA 01830
508-372-0400

Professional Quality Fractal Art Cryptography Scientific Software

NEW! HAMandel3.0 — The HAM Amiga Fractal Art System 256 Color Mandelbrot/Julia & MORE! $49.95

NEW! FractalPro — Fractal *Animation* - Includes HAMandel3.0 Zoom - Pan - UnZoom - Interactive $89.95

MegageM 1903 Adria Santa Maria CA 93454

Free Catalog - Shipping $2.00 - 6% Tax in California 805-349-1104

Oriental Desk Top Art 中國字



Vol. 1: Oriental art work **Vol. 2: Martial art figures**
Vol. 3: Oriental folk art **Vol. 4: Chinese Font**



High resolution B & W images, in IFF format Use as clipart in desktop publishing programs Price $29.95 per Vol + sales tax (CA only) + shipping ($3.0 in US). Send check to Order.

Software Integration Solutions
11027 Twin Pond Terrace San Diego, CA 92128 Tel:619-748-3350

AUSSIE AMIGA BUREAU

Laser Printing—File Transfer—BBS

- 300 dots per inch postscript laser output
- Main Amiga DTP packages supported
- Our Amiga reads IBM, Mac, Atari, C-64 disks
- File transfers between disk formats
- Bulletin Board for prices, news, file uploads
- 300/1200/2400 & soon 9600 baud
- Credit card facility on line

Desktop Utilities

Box 3053, Manuka ACT 2603, Aust.
Message Line: 06-239-6658
Bulletin Board: 06-239-6659

On line most hours / 7 days. For international callers, the Canberra prefix from early 1990 is 61-6. Upload Postscript, ASCII or doc files. Allow 1cm or 5" margins on A4 page. 35 standard Adobe fonts available. Use PPage or PageStream for colour separations.

ANI*MOTION*

Transfer your animations to videotape!

At last, Animotion provides the final link for your professional animations.

Single frame transfers to 3/4" S.P. and S-VHS From most ANIM files

Framebuffering for 24 bit images also available.

ANIMOTION
362 Hattertown Rd.
Monroe, CT 06468
(203) 929-3970

Call for pricing

Please ask for David Berez

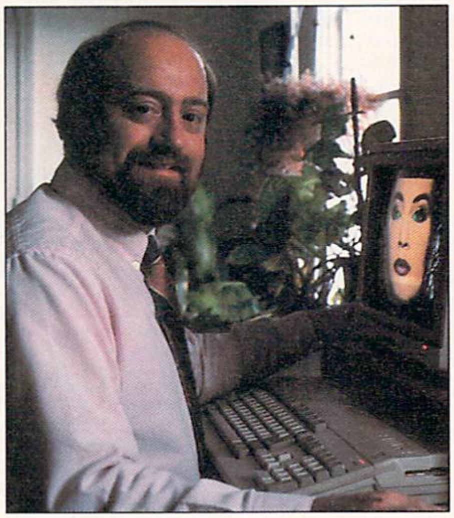
Gemini™ Marketing, Incorporated

For the very best Amiga shareware and PD with loads of new titles from Europe. Call this toll free number for catalog.

1-800-782-6861

THE END

You Ain't Seen Nothin' Yet



THE AMIGA AND its supporting cast of video and animation tools have come a long way since I first saw a primitive (by today's standards) graphic demo on the prototype system back in early 1985 several months before the computer's official launch. While developments and improvements during the past five years have been nothing short of spectacular, I believe they will pale by comparison with what is going to happen in the near future.

In the months and years ahead we can look forward to new hardware and software that will far outstrip the power and sophistication of existing products. Much of this development will center on the related areas of video, animation, and multimedia.

From Memory Lane To Future Alley

Look for disk-based animation players very soon. Capable of displaying an animation and sound directly from a hard disk instead of from RAM, they will greatly extend the size and complexity of your animations.

Multimedia software is already booming (see the February '90 issue of *AmigaWorld*). In addition to The Director (Right Answers Group), UltraCard (Intuitive Technologies), and VIVA (MichTron), keep an eye out for a host of new entries, including CanDo (INOVAtronics), ShowMaker (Gold Disk), DeluxeVideo III (Electronic Arts), a new release of The Director, and Commodore's own Amiga Authoring System. All promise new and exciting ways for users to combine animations, music, sound, video, and user input to create a wide variety of interactive presentations.

While current Amiga hardware is limited to a palette of 4096 colors, with a frame buffer it can generate images with a full 16 million colors. Frame buffers for the Amiga are now available from Impulse and Mimetics, and several others are under development. Animation software such as Sculpt-Animate 4D (Byte by Byte) and Turbo Silver 3.0 (Impulse) already support output to a frame buffer, where it can be recorded using a video tape recorder. In addition, my sources tell me that at least two new animation programs supporting frame-buffer animation will be released this year. Both are reportedly being designed for high-speed image rendering, allowing the user to create a full-length frame-buffer animation in hours instead of days.

Although there is already a wide variety of Amiga genlock hardware available, don't think there isn't more to come on that front. The Enhanced Chip Set (ECS) from Commodore offers several new features important to genlock use, including the new ECS ChromaKey feature through which you can now make any combination of colors transparent—not just color zero.

Genlocks are only the tip of the iceberg when it comes to what we will be seeing in new special-effects hardware this year. We should finally receive NewTek's much-delayed Video Toaster this year—and it will most likely be worth the wait. Imagine what you will be able to do with your Amiga in conjunction with a frame buffer, video digitizer, and digital special-effects generator! Not to be outdone, Digital Creations is developing both the V Machine and the Living Color System, both of which promise exciting desktop-video special effects.

And what about the Amiga itself? Commodore has already announced the A2500/30, an Amiga 2000 equipped with a 25 MHz 68030 accelerator board. Coming right on its heels, I fully expect the A3000—a true 32-bit, high-speed Amiga workstation—to be released in the next few months. The 1.4 operating system will also be out this year with improvements such as programmable sync rates, direct overscan support, and a variety of new modes including a high resolution, non-interlaced 640 × 480 screen and a 1280-pixel-wide NTSC-compatible display. Just a little further into the future, we can anticipate new versions of the Amiga's Chip Set that will support higher-resolution screens and, even more importantly, larger palettes.

Looking back over the last five years, one has to be impressed with the strides the Amiga has made. And while it is certainly true we have it good now, be assured that the best is yet to come! ■

—Louis R. Wallace
Senior Editor, Technology

PHOTOGRAPHED BY ANN DILLON

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 755 CHICO, CA

POSTAGE WILL BE PAID BY ADDRESSEE

VIDEOMAKER®
Subscription Fulfillment
P.O. Box 3727
Escondido, CA 92025-9646

To Receive FREE Product Information

AMIGA WORLD

TEAR
out the perforated card. Please print or type your name and address where indicated.

CIRCLE
the numbers on the card that correspond to the reader service numbers on the advertisements that interest you.

ORDER
a one year subscription to AmigaWorld by circling 500 on the card.

MAIL
the card with your check, money order or U.S. currency to:
AmigaWorld
Reader Service
Management Department
P.O. Box 5178
Pittsfield, MA 01203-9859
Or, you may request billing.

LOOK FOR
your subscription in 10 to 12 weeks.

REMEMBER
to put the proper postage on the card.

READER SERVICE

Special Issue card valid until July 31, 1990.

☐ Mr.
☐ Mrs.
☐ Ms. Name ______
Company ______
Title ______
Address ______
City/State/Zip ______
Telephone ______

A. What kind of Amiga do you use most?
☐ 1. Amiga 500 ☐ 4. Amiga 2500
☐ 2. Amiga 1000 ☐ 5. None
☐ 3. Amiga 2000

B. What software categories deserve more coverage?
☐ 6. Entertainment ☐ 14. Financial Management
☐ 7. Word Processing
☐ 8. Communications ☐ 15. Graphics
☐ 9. Spreadsheets ☐ 16. Education
☐ 10. Home Productivity ☐ 17. Music
☐ 11. Programming ☐ 18. Animation
☐ 12. Video ☐ 19. Multimedia
☐ 13. Database Management

C. What level of coverage do you prefer?
☐ 20. Introductory ☐ 22. Expert
☐ 21. Intermediate

D. Which would you like to see more of?
☐ 23. Opinion Columns ☐ 26. Humor
☐ 24. Reviews ☐ 27. Stories on interesting Amiga users
☐ 25. Tutorials

E. What do you find most valuable in *AmigaWorld*?
☐ 28. Editor's column ☐ 33. Notepad
☐ 29. Repartee ☐ 34. Hors' D'oeuvres
☐ 30. Reviews ☐ 35. What's New?
☐ 31. In-depth features ☐ 36. Help Key
☐ 32. Comparative reviews ☐ 37. Game Preserve

F. If you are not a subscriber, please circle 499 on this card.

G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is $29.97. Canada and Mexico $38.97, Foreign Surface, $49.97, Foreign Airmail $84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10–12 weeks for delivery.

1	6	11	16	21	201	206	211	216	221	401	406	411	416	421
2	7	12	17	22	202	207	212	217	222	402	407	412	417	422
3	8	13	18	23	203	208	213	218	223	403	408	413	418	423
4	9	14	19	24	204	209	214	219	224	404	409	414	419	424
5	10	15	20	25	205	210	215	220	225	405	410	415	420	425
26	31	36	41	46	226	231	236	241	246	426	431	436	441	446
27	32	37	42	47	227	232	237	242	247	427	432	437	442	447
28	33	38	43	48	228	233	238	243	248	428	433	438	443	448
29	34	39	44	49	229	234	239	244	249	429	434	439	444	449
30	35	40	45	50	230	235	240	245	250	430	435	440	445	450
51	56	61	66	71	251	256	261	266	271	451	456	461	466	471
52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
54	59	64	69	74	254	259	264	269	274	454	459	464	469	474
55	60	65	70	75	255	260	265	270	275	455	460	465	470	475
76	81	86	91	96	276	281	286	291	296	476	481	486	491	496
77	82	87	92	97	277	282	287	292	297	477	482	487	492	497
78	83	88	93	98	278	283	288	293	298	478	483	488	493	498
79	84	89	94	99	279	284	289	294	299	479	484	489	494	499
80	85	90	95	100	280	285	290	295	300	480	485	490	495	500
101	106	111	116	121	301	306	311	316	321	501	506	511	516	521
102	107	112	117	122	302	307	312	317	322	502	507	512	517	522
103	108	113	118	123	303	308	313	318	323	503	508	513	518	523
104	109	114	119	124	304	309	314	319	324	504	509	514	519	524
105	110	115	120	125	305	310	315	320	325	505	510	515	520	525
126	131	136	141	146	326	331	336	341	346	526	531	536	541	546
127	132	137	142	147	327	332	337	342	347	527	532	537	542	547
128	133	138	143	148	328	333	338	343	348	528	533	538	543	548
129	134	139	144	149	329	334	339	344	349	529	534	539	544	549
130	135	140	145	150	330	335	340	345	350	530	535	540	545	550
151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
153	158	163	168	173	353	358	363	368	373	553	558	563	568	573
154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

READER SERVICE

Special Issue card valid until July 31, 1990.

☐ Mr.
☐ Mrs.
☐ Ms. Name ______
Title ______
Address ______
City/State/Zip ______
Telephone ______

A. What kind of Amiga do you use most?
☐ 1. Amiga 500 ☐ 4. Amiga 2500
☐ 2. Amiga 1000 ☐ 5. None
☐ 3. Amiga 2000

B. What software categories deserve more coverage?
☐ 6. Entertainment ☐ 14. Financial Management
☐ 7. Word Processing
☐ 8. Communications ☐ 15. Graphics
☐ 9. Spreadsheets ☐ 16. Education
☐ 10. Home Productivity ☐ 17. Music
☐ 11. Programming ☐ 18. Animation
☐ 12. Video ☐ 19. Multimedia
☐ 13. Database Management

C. What level of coverage do you prefer?
☐ 20. Introductory ☐ 22. Expert
☐ 21. Intermediate

D. Which would you like to see more of?
☐ 23. Opinion Columns ☐ 26. Humor
☐ 24. Reviews ☐ 27. Stories on interesting Amiga users
☐ 25. Tutorials

E. What do you find most valuable in *AmigaWorld*?
☐ 28. Editor's column ☐ 33. Notepad
☐ 29. Repartee ☐ 34. Hors' D'oeuvres
☐ 30. Reviews ☐ 35. What's New?
☐ 31. In-depth features ☐ 36. Help Key
☐ 32. Comparative reviews ☐ 37. Game Preserve

F. If you are not a subscriber, please circle 499 on this card.

G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is $29.97. Canada and Mexico $38.97, Foreign Surface, $49.97, Foreign Airmail $84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10–12 weeks for delivery.

1	6	11	16	21	201	206	211	216	221	401	406	411	416	421
2	7	12	17	22	202	207	212	217	222	402	407	412	417	422
3	8	13	18	23	203	208	213	218	223	403	408	413	418	423
4	9	14	19	24	204	209	214	219	224	404	409	414	419	424
5	10	15	20	25	205	210	215	220	225	405	410	415	420	425
26	31	36	41	46	226	231	236	241	246	426	431	436	441	446
27	32	37	42	47	227	232	237	242	247	427	432	437	442	447
28	33	38	43	48	228	233	238	243	248	428	433	438	443	448
29	34	39	44	49	229	234	239	244	249	429	434	439	444	449
30	35	40	45	50	230	235	240	245	250	430	435	440	445	450
51	56	61	66	71	251	256	261	266	271	451	456	461	466	471
52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
54	59	64	69	74	254	259	264	269	274	454	459	464	469	474
55	60	65	70	75	255	260	265	270	275	455	460	465	470	475
76	81	86	91	96	276	281	286	291	296	476	481	486	491	496
77	82	87	92	97	277	282	287	292	297	477	482	487	492	497
78	83	88	93	98	278	283	288	293	298	478	483	488	493	498
79	84	89	94	99	279	284	289	294	299	479	484	489	494	499
80	85	90	95	100	280	285	290	295	300	480	485	490	495	500
101	106	111	116	121	301	306	311	316	321	501	506	511	516	521
102	107	112	117	122	302	307	312	317	322	502	507	512	517	522
103	108	113	118	123	303	308	313	318	323	503	508	513	518	523
104	109	114	119	124	304	309	314	319	324	504	509	514	519	524
105	110	115	120	125	305	310	315	320	325	505	510	515	520	525
126	131	136	141	146	326	331	336	341	346	526	531	536	541	546
127	132	137	142	147	327	332	337	342	347	527	532	537	542	547
128	133	138	143	148	328	333	338	343	348	528	533	538	543	548
129	134	139	144	149	329	334	339	344	349	529	534	539	544	549
130	135	140	145	150	330	335	340	345	350	530	535	540	545	550
151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
153	158	163	168	173	353	358	363	368	373	553	558	563	568	573
154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

READER SERVICE

To Receive FREE Product Information

AMIGA WORLD

TEAR
out the perforated card. Please print or type your name and address where indicated.

CIRCLE
the numbers on the card that correspond to the reader service numbers on the advertisements that interest you.

ORDER
a one year subscription to AmigaWorld by circling 500 on the card.

MAIL
the card with your check, money order or U.S. currency to:
AmigaWorld
Reader Service Dept.
P.O. Box 5178
Pittsfield, MA 01203-9859
Or, you may request billing.

LOOK FOR
your subscription in 10 to 12 weeks.

REMEMBER
to put the proper postage on the card.

READER SERVICE

PLEASE USE FIRST CLASS LETTER POSTAGE

AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170

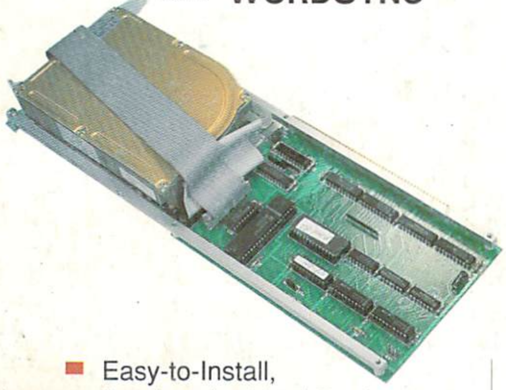
PLEASE USE FIRST CLASS LETTER POSTAGE

AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170


UNREAL
VD-1
SILVER
TERRAIN
Diamond
UNREAL, is one way to describe our complete line of software and hardware tools.
Capture the REAL world of video and display REAL 24 bit color with VD-1. Let your mind roam across the REALISTIC fractal landscapes of TERRAIN. DIAMOND lets you add REAL sparkle to your digital light paintings and Turbo SILVER gives you power to create SURREALISTIC worlds of 3D animation and Ray Tracing.
From the REALISTIC to the SURREALISTIC, Impulse has the right tools. REALLY!
Impulse Inc.
Dealer alert: To buy direct call
1•800•328•0184
Circle 407 on Reader Service card.
6 1 2 • 5 6 6 • 0 2 2 1

THE BEST FOR YOUR AMIGA® 2000

SupraDrive™ with WordSync™



- Easy-to-Install, Autobooting Hard Card with WordSync™ Interface
- WordSync Interface Kit also available separately
- Interface transfers 16 bits at once, giving DMA Speed Without DMA Problems
- Eliminates the sound, video, and serial I/O interruptions found with DMA iinterfaces
- 1-slot design & SCSI-out port
- Easy On/Off Autoboot Jumper
- Compatible with Amiga Bridgeboard, RAM, digitizers, and other boards
- Includes SupraBoot & SupraTools — two full disks of utility software
- Up to 30 Partitions
- All available file systems supported: FFS, MS-DOS, Unix, Macintosh, etc.
- Access to low-level parameters without maintaining MountList
- Excellent Technical Support
- Made in the U.S.A.

30MB (40 ms.)	**$649**
40MB (11 ms. Quantum)	**$799**
80MB (11 ms. Quantum)	**$1099**
40MB SyQuest Removable	**$1199**
WordSync Interface Kit	**$199.95**

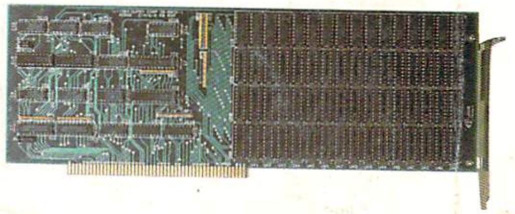
SupraModem™ 2400zi



- Half card modem fits in any Amiga bus slot
- Up to 5 modems per computer
- Works with all popular Amiga telecommunications software
- 100% compatible with the industry-standard "**AT**" command set
- Asynchronous 2400/1200/300 baud operation
- Compatible with Bell 103/212A and CCITT V.21/V.22/V.22bis
- Autoanswer/Autodial (tone or pulse)
- Adjustable-volume speaker
- Nonvolatile memory stores custom modem configuration and one telephone number
- Includes free subscriptions to popular on-line services
- Made in the U.S.A.

2400zi	**$179.95**

SupraRam™ 2000



- 2, 4, 6, & 8MB configurations available
- Installs easily into any Amiga internal expansion slot
- Easy to expand from your initial configuration — Start with 2MB & add RAM at your convenience
- 6MB configuration allows for maximum benefit with the Amiga Bridgeboard
- Lets you run larger and more sophisticated programs
- Allows creation of large and extremely fast RAM disks
- Test mode & test software make troubleshooting easy
- Made in the U.S.A.

8MB RAM Board 0MB	**$199**
with **2MB** Installed	**$449**
with **4MB** Installed	**$649**
with **6MB** Installed	**$849**
with **8MB** Installed	**$1049**

AVAILABLE AT YOUR LOCAL DEALER, OR CALL:

Supra Corporation

1133 Commercial Way Albany, OR 97321
Voice: 503-967-9075 Fax: 503-926-9370

ORDERS: 1-800-727-8772

SupraDrive, WordSync, SupraModem 2400zi, and SupraRAM 2000 are trademarks of Supra Corporation. Amiga is a registered trademark of Commodore-Amiga, Inc.

Circle 427 on Reader Service card.